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# A REGIONAL RECONNAISSANCE OF THE SOUTH PLATTE RIVER BASIN

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The South Platte River Basin was selected as a region for a case study in application of the regional reconnaissance method since it illustrates many of the questions facing the practitioner in understanding such a study. This report first outlines population trends, then describes the environment in which those people live. This is essentially an inventory of resources available for use by the inhabitants of the area and the circumstances that condition their use. An economic activities inventory follows, which is an analysis of employment and production trends. In the final section on income a measurement is ventured of how the people of this region have prospered relative to people in other regions.

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# SOUTH PLATTE RIVER BASIN

## VOLUME I

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W.R. Section

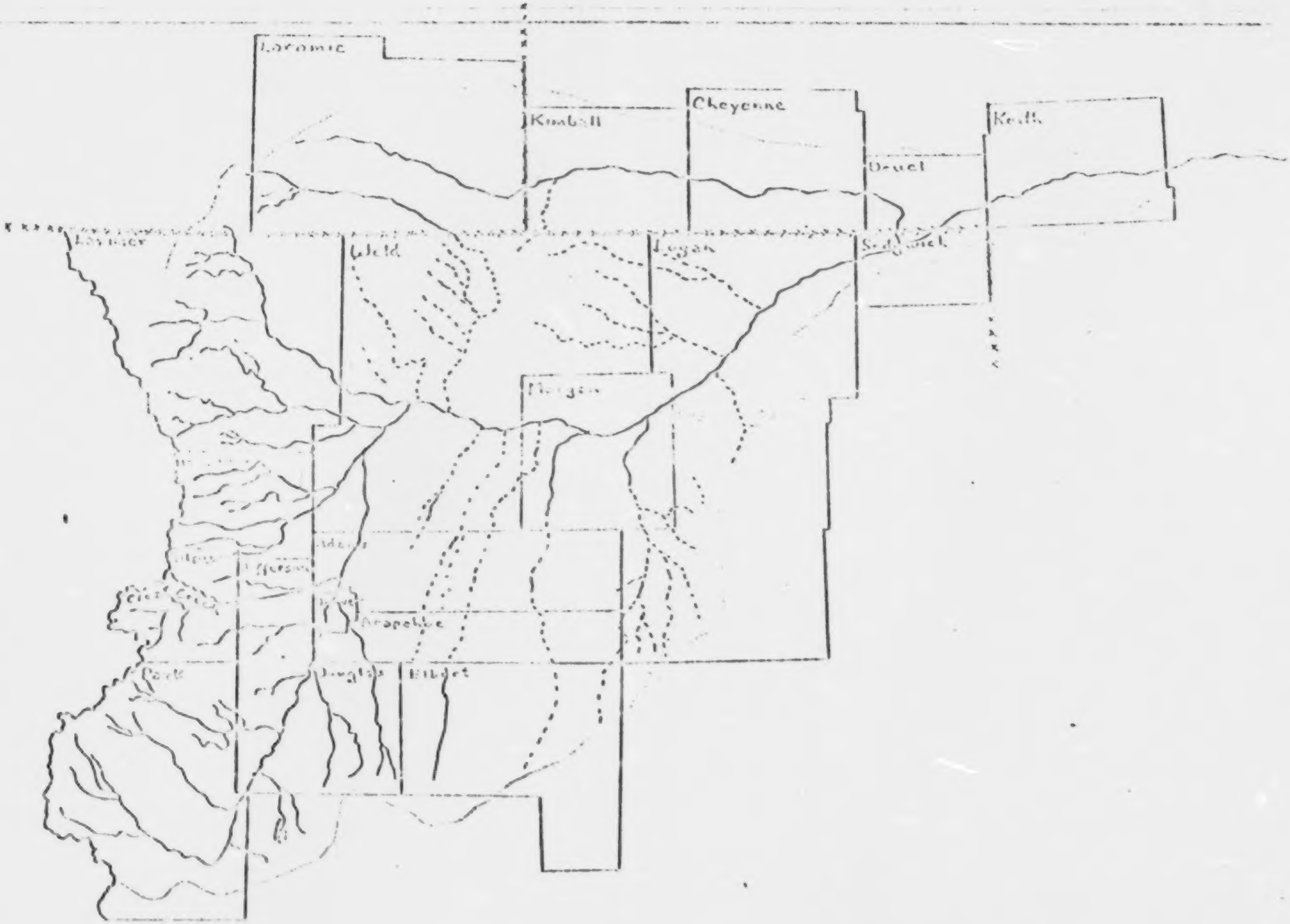
# CHAPTER IV

# A REGIONAL RECONNAISSANCE OF THE SOUTH PLATTE RIVER BASIN

The South Platte River Basin has been selected as a region for a case study in application of the regional reconnaissance method. It illustrates many of the questions facing the practitioner in understanding such a study. While it cannot be described as a single feature region, it is homogenous only in being part of a single water shed (see Figure 2). And even in this respect it is not truly a water resource region inasmuch as water is imported into the basin from other river basins. There is considerable similarity, if not homogeneity, in climate and topography throughout the basin, but a considerable degree of variation also. It is not a political unity, but extends into three states: Colorado, Nebraska, and Wyoming. There are twenty-one counties involved; sixteen in Colorado, four in Nebraska, and one in Wyoming--a total area of 28,939 square miles and a total 1960 population of nearly one and a quarter million people. There is one large city over half a million people in size, eight other cities over 20,000 population, and nine between 10,000 and 20,000 population and six with 5,000 to 10,000 people, twenty-two between

1,000 and 5,000, twenty-two of 500 to 1,000 population and more than fifty-two villages with less than 500 inhabitants. Five of the twenty-one counties are part of a standard metropolitan statistical area. Seven of the remaining counties are fifty percent or more urban.. Nine counties have no urban population.

The region is, therefore, far from homogenous and in number of statistical units to be analyzed somewhat unwieldy. It is immediately apparent that Metropolitan Denver dominates the region in nearly every respect. To approach the analysis as a single region, then, would yield simply a muddied view of the trends in the metropolitan area. Individual and perhaps contrary trends in the non-metropolitan portions of the basin would be completely lost in the overwhelming metropolitan trends. This being so, it was felt that the analysis would be enhanced by further subdividing the South Platte River Basin (SPRB) into subregions in which the structure of economic activity would be more homogenous. Counties are the fundamental geographic unit of analysis since they are the smallest unit for which fairly consistent data are available. Twenty-one county analyses would be confusion compounded so they are grouped together into four subregions which seem to have a fairly high degree of internal common interest, i.e. the incomes of individuals are largely interdependent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Deuel
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Weld
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Jefferson
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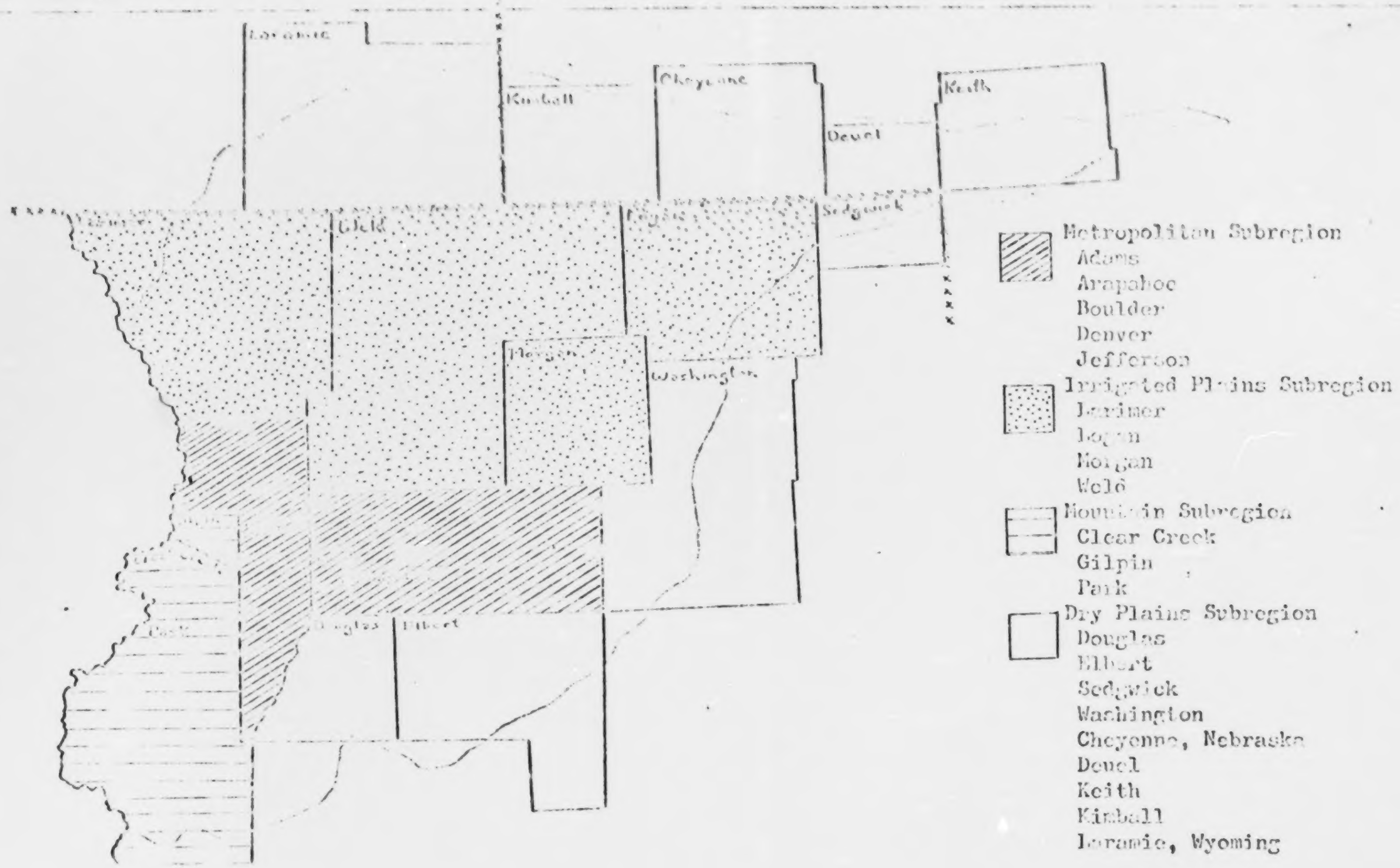
Denver
Arapahoe
Park
Douglas
Elbert

Fig. 2 --The South Platte River and Its Tributaries

and in general sensitive to the same exogenous forces. These four subregions, as illustrated in Figure 3, are (1) Metropolitan subregion; (2) Irrigated Plains subregion; (3) Dry Plains subregion; and (4) Mountain subregion.

The Metropolitan subregion is composed of the Colorado counties of Adams, Arapahoe, Boulder, Denver and Jefferson. This is the Denver Standard Metropolitan Statistical Area as defined by the Bureau of Census. No attempt was made to define the economic boundaries the metropolitan area by trade area, etc. Economic activity in this subregion is of the manufacturing, service, and distribution form, characteristic of any large city. There have been numerous studies done on the various aspects of Metropolitan Denver, but data used here, by and large, is from the standard reference materials readily available for a reconnaissance study of any region.

The Irrigated Plains subregion includes the Colorado counties of Larimer, Logan, Morgan, and Weld. This is a highly productive (if not entirely prosperous) agricultural region based on cattle and sugar beet production. Nearly seventy-two percent of the farms here are irrigated. This subregion is undergoing considerable change in the pattern of economic activity, with growth of the "new" research and electronic industry. It is second only to the Metropolitan subregion in growth in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Boulder
Denver
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Irrigated Plains Subregion
Larimer
Logan
Morgan
Weld
Mountain Subregion
Clear Creek
Gilpin
Park
Dry Plains Subregion
Douglas
Elbert
Sedgwick
Washington
Cheyenne, Nebraska
Deuel
Keith
Kimball
Laramie, Wyoming

Fig. 3 —The South Platte River Basin Analytical Subregions and Counties

the region. Portions of it (eastern Larimer and western Weld counties) are actually becoming more akin to the Metropolitan area and a study made at some not too distant future date would likely include these portions in the Metropolitan subregion.

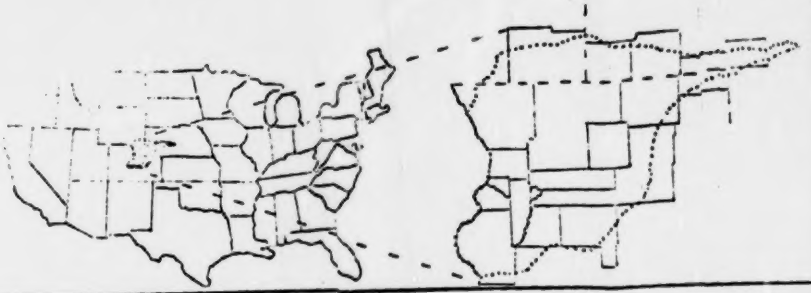
The Dry Plains subregion is made up of the Colorado counties of Douglas, Elbert, Washington, and Sedgwick; the Nebraska counties of Cheyenne, Deuel, Keith, and Kimball; and the Wyoming county of Laramie. This is a less prosperous (with qualifications) region of cattle grazing and dry land wheat farming. Only sixteen percent of farms here are irrigated. Gas and oil production is also important. This is probably the least homogenous of the subregions, and the one which presents the biggest data problem since there is not complete comparability in statistics available from the three states involved. Douglas County, although belonging in this subregion by most measures, is fast becoming part of Metropolitan Denver and shows some trends contrary to the other counties of the Dry Plains subregions. Laramie County with the city of Cheyenne dominates the subregion and its urban population and activity alter the trends that might be more typical of the rest of the subregion.. In addition Cheyenne is a nodal center whose area of influence lies largely outside our defined region.

The Mountain subregion is the smallest in volume and importance of economic activity as well as size. The Colorado counties of Clear Creek, Gilpin, and Park comprise the subregion. An area of former mining importance, it is now a relatively depressed area of marginal agricultural activity (Park with its large ranches carries on the only important agriculturehere). It has considerable tourist and recreation potential, and its development will be closely related to growth of the Metropolitan area in this respect.

In outline, the study follows closely the pattern of the reconnaissance review sheet of Figure 1. The first section outlines population trends. The following section is a description of the environment in which these people live. This is essentially an inventory of resources available for use by the inhabitants of the area and the circumstances which condition their use. The next step is an economic activities inventory, which is an analysis of the way in which people of the area have utilized the resources available to them. This is in terms of employment and production trends. In the final section on income a measurement is ventured of how the people of this region, living in this environment, pursuing the economic activities they do, have prospered relative to people in other regions. A brief sketch of the findings of each sector investigated is prepared on a reconnaissance review sheet as seen at the end of each section. Finally, having drawn together data on each element of the region considered to be important to this study, what has been learned about the region is summed up in column four of the reconnaissance review as Strategic Factors of the Region. A single summary of findings or picture of the region is presented in the completed reconnaissance review sheet, Figure 4. It is felt that graphic, as well as tabular illustration of data is especially useful in this type of study and some attempt has been made to put some of the data gathered into a graphic form. These illustrations have not been organized as part of the summary review seen in Figure 4, but occur at the appropriate place throughout the supporting study. Since one of the objectives of this study is to provide a working guide to the regional reconnaissance method, some of the data sheets that might normally be omitted from such a study are included.

Regional Reconnaissance

Region:
South Platte River Basin
Investigator:
Karl Starch
Date:
1966



## I

## Population Trends

This is the largest (1.4 million in 1965) and fastest growing (63% increase between 1950 and 1965) population center in the Rocky Mountain Region. Its rate of growth has been double the U.S. rate each decade since 1940. There is a pronounced concentration of population within the region along the eastern slope of the mountains, and a secondary concentration along the South Platte River. It is a predominantly urban region. Three-fourths of the area population lives in Metropolitan Denver. In addition, there are 30 towns over 1000 population and 70 towns with populations between 100 and 1000 in the region outside the metropolitan area. The region is, in fact, more highly urbanized (83%) than the U.S. (70%). Only 5% of the region's population lives on farms. Population density is 43 persons per square mile (ranging from 2 per square mile in the Mountain Subregion to 254 per square mile in the Metropolitan Subregion) compared to 50.5 persons per square mile for the U.S. as a whole. This is an island of high density population in the relatively unpeopled plains and mountains surrounding it.

The population here is somewhat younder (median age 26) than the United States (median age 30). The increase in population has been primarily in the productive age groups. Both of which are a function of the fact that migration has been the major factor in population growth. The proportion of non-whites (2%) is much smaller than the U.S. (11%). Growth trends vary greatly between the metropolitan and non-metropolitan areas of the basin.

Population is expected to increase to about 2 million by 1980 and 3 million by the year 2000. This represents an annual growth rate of 2.2% through the 1970's, 1.4% after 1980 and 1% after 2000. The migration rate will decline towards the national average. Most of the increase will take place in the metropolitan counties.

## Environment: Natural

The SPRB is somewhat remote
activity in the United States. A
29,000 square miles in size. One-
Mountains, with more than a dozen
most attractive mountain scenery
Three-quarters of the region is o
rolling. The climate is semi-ar
mild (temp. range: 25° in Jan. to
the winter months, and is particu
between the mountains and the pla
climate and terrain (a handicap w
activity) is perhaps the region's
The cities of the region hav
space for expansion. The land of
71% farmed. Agricultural activit
million acres), supplemented by i
farming (3 1/4 million acres). The
million (2/3 from livestock produ
Water has been extremely imp
The surface supply (1.2 million a
over appropriated (3.7 million a.
imports (0.3 million a.f. per yea
to future growth is more a matter
use, the transfer of rights, etc.
Metallic minerals (the most
zinc, lead, tungsten and uranium)
portions of the region, but minin
importance. There is a variety o
materials such as cement, sand an
tial coal reserves (3/4 billion s
barrels) in the plains portion of
tinuing utilization in electric p
politan area, but petroleum produ

## II

## ironment: Natural Resources and Institutions

somewhat remote from the major centers of population and
Jnited States. A part of the Missouri River Basin, it is
les in size. One-quarter of the region is in the Rocky
more than a dozen peaks over 14,000 feet and some of the
mountain scenery and recreation area in the country.
f the region is on the Great Plains, flat or gently
limate is semi-arid (13-17 in. of rainfall annually),
e: 25° in Jan. to 75° in July), with much sunshine even in
s, and is particularly favorable in the transition zone
tains and the plains. This fortunate coincidence of
ain (a handicap when agriculture was the major economic
haps the region's most important resource today.
of the region have a great deal of relatively level, open
ion. The land of the region is 80% privately owned and
icultural activity centers around cattle grazing (7
supplemented by irrigated (1 million acres) and dryland
lion acres). The value of farm products approaches $400
om livestock products).
been extremely important in early agricultural development.
ply (1.2 million acre feet (a.f.) per year) is greatly
ed (3.7 million a.f. per year used) despite increasing
llion a.f. per year). Water availability as a limitation
n is more a matter of changing institutions governing its
er of rights, etc.
inerals (the most important have been gold, silver, copper,
gsten and uranium) occur in abundance in the mountain
region, but mining activity has declined to relative un-
ere is a variety of non-metals, especially building
as cement, sand and gravel and stone. There are substan-
ves (3/4 billion short tons) and oil reserves (30 million
plains portion of the region. The coal is finding con-
tion in electric power generation for the nearby metro-
ut petroleum production is declining rapidly.

## Economic Activit

The region was by-passed by early settlement
important economic activity. Irrigated agricultu
region until the past two decades. This remains
has long been a trade and service center for the
In 1950-60, employment in the SPRB grew at a
with the plains areas of the basin growing at abo
Employment in the primary industries is decreasin
growing faster (SPRB is approaching U.S. rate);
the U.S. (the U.S. is approaching the SPRB rate)
tion, transportation and communications. Manufac
(it was first in the U.S. in all three census yea
in the SPRB.
In 1950-60, the SPRB showed no growth advan
services). It did have a regional share (competi
Its most striking competitive advantage is in du
twenty times its industry mix effect (the region
The relative growth position of the region in te
in 1940-50's, but remained above that of the Roc
among major regions of the U.S.
The SPRB has a highly skilled labor force w
U.S. labor force.
The value added in manufacturing, $1 billio
a like increase for the preceding five year peri
and kindred products. The largest increase in m
fabricated metal, electrical machinery and food
Trade, with sales of over $5 billion in 196
services are growing faster.
Per capita income is above the U.S. average
has been faster than the U.S. rate since 1940, b
growth, the rate of increase in total income has
capita incomes within the basin, although the Me
Irrigated Plains Subregions the lowest. The inc
distribution of families among income groups was
portion of its families in the less than $3000 a
the U.S.

Fig. 4 --Completed Reconnaissance
South Platte River

## III

## Economic Activities: Employment, Production and Income

by-passed by early settlement. The mining boom in the mountains (1860-1890) was the first
ctivity. Irrigated agriculture developed early (1870) and has been the economic mainstay of the
t two decades. This remains one of the most productive agricultural regions in the nation. Denver
e and service center for the Rocky Mountain Region. Manufacturing is becoming a dominant activity.
loyment in the SPRB grew at a rate 2 3/4 times as fast as the U.S. (led by the Metro Subregion,
s of the basin growing at about the same rate as the U.S., and the Mountain Subregion declining).
imary industries is decreasing at a slower rate than the U.S.; secondary industry employment is
is approaching U.S. rate); employment in tertiary activities is increasing at a slower rate than
s approaching the SPRB rate). The rate of growth is fastest in manufacturing, public administra-
and communications. Manufacturing was third in importance as an employer in 1940, first in 1960
U.S. in all three census years). Agriculture ranks third as an employer in the U.S. but eighth

SPRB showed no growth advantage in employment from its industry mix (except moderately in
ave a regional share (competitive) advantage in agriculture, transportation and some services.
mpetitive advantage is in durable manufacturing, which was ten times its national growth effect and
ustry mix effect (the region showed a competitive disadvantage in durable manufacturing in 1940-50).
position of the region in terms of employment change was less favorable in the 1950-60 period than
mained above that of the Rocky Mountain and Southwest Regions, being second only to the Far West
of the U.S.
highly skilled labor force with the proportion of college trained people 50% greater than in the

in manufacturing, $1 billion in 1963, represented a 65% increase over five years earlier, and had
the preceding five year period. The largest number of manufacturing firms in 1964 was in food
. The largest increase in number of firms, 1956-1964, was in machinery (except electrical),
ectrical machinery and food and kindred products.
es of over $5 billion in 1963, is bigger than services, with 1963 receipts of $1/3 billion, but
faster.
me is above the U.S. average. The rate of increase in both per capita and total personal income
the U.S. rate since 1940, but the rates are converging. Because of a high rate of population
increase in total income has been the greater. There has been considerable convergence in per
n the basin, although the Metropolitan area remains much the wealthiest and the Mountain and
regions the lowest. The income position of the region has improved greatly since 1950. In 1950,
lies among income groups was much the same as the U.S. In 1960, the SPRB had a much smaller
ies in the less than $3000 group and a much higher portion in the above $7,000 brackets than did

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4 --Completed Reconnaissance Review Sheet of The
South Platte River Basin

| ce | IV<br>Strategic Factors | V<br>Recommendations |
|---|---|---|
| 1860-1890) was the first<br>n the economic mainstay of the<br>al regions in the nation. Denver<br>is becoming a dominant activity.<br>(led by the Metro Subregion,<br>Mountain Subregion declining).<br>ondary industry employment is<br>ncreasing at a slower rate than<br>nufacturing, public administra-<br>employer in 1940, first in 1960<br>mployer in the U.S. but eighth<br>ix (except moderately in<br>portation and some services.<br>s its national growth effect and<br>durable manufacturing in 1940-50).<br>rable in the 1950-60 period than<br>ng second only to the Far West<br>people 50% greater than in the<br>over five years earlier, and had<br>ng firms in 1964 was in food<br>inery (except electrical),<br>receipts of $1/3 billion, but<br>pita and total personal income<br>of a high rate of population<br>siderable convergence in per<br>hiest and the Mountain and<br>d greatly since 1950. In 1950,<br>he SPRB had a much smaller<br>above $7,000 brackets than did | The region's current growth is largely based on industries whose most important input is skilled labor. The rise in importance of this type of industry (research-space-electronic-government related) producing high value/bulk products along with improvements in transportation technology and facilities has in part overcome the region's poor market access, and have made its scenic and climate resources exploitable, since these industries are free to locate anywhere, and the skilled people basic to their operation choose to live where they find the most enjoyable living. Another major industry, recreation, is likewise based on the natural features of the area as well as population growth and high incomes. Trade and services are growing in support of these other activities. Decentralization trends in the food processing industry and its location to sources of agricultural raw materials is also working to the region's advantage. | Since much of the recent growth is b<br>upon the attractiveness of its environmen<br>SPRB should emphasize the maintenance of<br>environment through careful planning in s<br>things as zoning for best land use, build<br>codes, pollution controls, etc. that will<br>keep the area attractive under the increa<br>pressures of rapid growth.<br>A unified administration of the nume<br>communities comprising the metropolitan<br>would be particularly valuable, and would<br>facilitate effective planning such as is<br>being undertaken by the ICRPC with more<br>like the Metro Denver sewer system now be<br>built.<br>Efforts to develop and strengthen th<br>supporting (and attracting) elements of t<br>new growth industries, specifically the<br>tional institutions and research faciliti<br>should be expanded.<br>Recognition of the changed characte<br>activity in the region must also find ex<br>sion in adaptation of institutions such<br>governing the allocation and use of avail<br>water supplies. Most difficult here is<br>feral of water from agricultural use to<br>trial and municipal use. Although the I<br>Plains Subregion is a highly productive<br>cultural area, family incomes are low an<br>adjustment here would serve to get these<br>into higher income occupations as well a<br>water available for higher economic uses. |

| | IV<br>Strategic Factors | V<br>Recommendations |
|---|---|---|
| first<br>stay of the<br>ation. Denver<br>nant activity.<br>Subregion,<br>declining).<br>loyment is<br>er rate than<br>administra-<br>irst in 1960<br>but eighth<br><br>ly in<br>services.<br>th effect and<br>ng in 1940-50).<br>0 period than<br>he Far West<br><br>than in the<br><br>lier, and had<br>s in food<br>rical),<br><br>llion, but<br><br>onal income<br>opulation<br>ce in per<br>ain and<br>0. In 1950,<br>smaller.<br>ts than did | The region's current growth is largely based on industries whose most important input is skilled labor. The rise in importance of this type of industry (research-space-electronic-government related) producing high value/bulk products along with improvements in transportation technology and facilities has in part overcome the region's poor market access, and have made its scenic and climate resources exploitable, since these industries are free to locate anywhere, and the skilled people basic to their operation choose to live where they find the most enjoyable living. Another major industry, recreation, is likewise based on the natural features of the area as well as population growth and high incomes. Trade and services are growing in support of these other activities. Decentralization trends in the food processing industry and its location to sources of agricultural raw materials is also working to the region's advantage. | Since much of the recent growth is based upon the attractiveness of its environment, the SPRB should emphasize the maintenance of this environment through careful planning in such things as zoning for best land use, building codes, pollution controls, etc. that will help keep the area attractive under the increasing pressures of rapid growth.<br>A unified administration of the numerous communities comprising the metropolitan area would be particularly valuable, and would facilitate effective planning such as is now being undertaken by the ICRPC with more results like the Metro Denver sewer system now being built.<br>Efforts to develop and strengthen the supporting (and attracting) elements of the new growth industries, specifically the educational institutions and research facilities, should be expanded.<br>Recognition of the changed character of activity in the region must also find expression in adaptation of institutions such as those governing the allocation and use of available water supplies. Most difficult here is transferal of water from agricultural use to industrial and municipal use. Although the Irrigated Plains Subregion is a highly productive agricultural area, family incomes are low and an adjustment here would serve to get these families into higher income occupations as well as making water available for higher economic uses. |

### a. Population of the South Platte River Basin

Population is an important variable in the interdependent system that is a regional economy. It is the interaction between the people of an area and their resources that constitutes the economy activity characteristic of that area. The population affects the size and character of the economy from both the supply and the demand sides. The labor skills of the population are of course a basic input in the production of goods and services while on the other hand the size of the population defines the number of consumers, the satisfaction of whose wants are the ultimate aim of production. This can be posed in terms of the classic chicken and egg controversy. Is the population there because the economic opportunities exist there or have the economic activities developed in response to the needs of the population? If one accepts the philosophy that the size of a region's population is essentially determined by the employment opportunities present, it would seem logical not to attempt the population analysis until after a study has been made of the resources and economic activities of the region. This is quite true. The population projections are the culmination of the economic analysis. Nevertheless it is believed that population is a good starting point for a regional analysis in that it outlines past trends. Preparation of tentative projections will give guidelines and raise questions to be answered in the detailed appraisal of resources. Actually all projections, even the final ones, should be regarded as tentative and illustrative rather than definitive. Because of the importance of population forecasting to a regional analysis, techniques used, the unavoidable hazards and limitations involved and sources of data are discussed at some length in the Appendix A to this study.

Statistical Analysis of Past Population

Tables a-1 and a-2 identify the counties (21), cities and towns (approx. 118) that comprise the political subdivisions of the South Platte River Basin. Figure a-1 roughly indicates the distribution of population throughout the area. Two features of the population distribution are immediately apparent from this map. First, population has tended to cluster along the river and its tributaries. This is undoubtedly because of the availability of water for crops and livestock, and also because the river, although not navigable, formed the most accessible route into and out of the area during the period of early settlement. A larger scale map of the growth trends of Metropolitan Denver today would show a similar clustering of development along the major transportation arteries. This is the historic distribution of population and a population

[illegible]

So [illegible]

## TABLE a-1

## POPULATION OF COUNTIES
## SOUTH PLATTE RIVER BASIN

| County | 1960 | 1965[a] (Est.) |
|---|---|---|
| Colorado: | | |
| Adams | 120,296 | 153,500 |
| Arapahoe | 113,426 | 137,500 |
| Boulder | 74,254 | 91,000 |
| Clear Creek | 2,793 | 3,000 |
| Denver | 493,887 | 527,000 |
| Douglas | 4,816 | 5,900 |
| Elbert | 3,708 | 3,675 |
| Gilpin | 685 | 800 |
| Jefferson | 127,520 | 178,000 |
| Larimer | 53,343 | 65,000 |
| Logan | 20,302 | 20,700 |
| Morgan | 21,192 | 21,300 |
| Park | 1,822 | 1,750 |
| Sedgwick | 4,242 | 4,250 |
| Washington | 6,625 | 6,700 |
| Weld | 72,344 | 79,000 |
| Sub Total | -1,121,255 | 1,299,075 |
| Nebraska: | | |
| Cheyenne | 14,828 | 16,100 |
| Deuel | 3,125 | 3,000 |
| Keith | 7,958 | 8,300 |
| Kimball | 7,975 | 9,700 |
| Sub Total | 33,836 | 37,100 |
| Wyoming: | | |
| Laramie | 60,149 | 67,400 |
| South Platte River Basin: | 1,215,290 | 1,403,575 |

[a] Estimated by Colorado State Planning Division, Colorado Gazetteer, 1965; Census of Population, 1960, PC (1) 29A & 52A, Table 6

Trial a) [illegible]

## TABLE a-2

## POPULATION OF TOWNS AND CITIES OF THE SOUTH PLATTE RIVER BASIN: 1960 and 1965

**20,000 or More**

| Town or City | 1960 | 1965[b] |
|---|---|---|
| [a]Denver | 493,887 | 527,000 |
| [a]Wheatridge-Lakewood | 40,957 | 75,000 |
| [a]Aurora | 48,548 | 66,000 |
| [a]Boulder | 37,718 | 50,250 |
| Cheyenne, Wyo. | 43,505 | 49,800 |
| [a]Englewood | 33,398 | 36,700 |
| [a]Arvada | 19,242 | 36,000 |
| Greeley | 26,314 | 32,000 |
| Ft. Collins | 25,027 | 31,000 |

**10,000 - 19,999**

| Town or City | 1960 | 1965[b] |
|---|---|---|
| [a]Littleton | 13,670 | 19,000 |
| [a]Commerce City | 8,970 | 17,800 |
| [a]Westminster | 13,850 | 17,500 |
| Longmont | 11,489 | 14,000 |
| [a]Thornton | 11,353 | 14,000 |
| Loveland | 9,734 | 13,500 |
| Sterling | 10,751 | 11,500 |
| [a]Derby | 10,124 | 12,000 |

**5,000 - 9,999**

| Town or City | 1960 | 1965[b] |
|---|---|---|
| Sidney, Neb. | 8,004 | 8,600 |
| [a]Golden | 7,118 | 8,470 |
| Ft. Morgan | 7,379 | 8,100 |
| Brighton | 7,055 | 8,100 |
| [a]Broomfield | 4,535 | 8,000 |
| [a]Edgewater | 4,314 | 6,000 |

**1,000 - 4,999**

| Town or City | 1960 | 1965[b] |
|---|---|---|
| Kimball, Neb. | 4,384 | 5,000 |
| Ogallalo, Neb. | 4,250 | 4,500 |
| [a]Sheridan | 3,559 | 4,150 |
| Brush | 3,621 | 4,000 |
| [a]Lafayette | 2,612 | 2,850 |
| [a]Cherry Hills Village | 1,931 | 2,750 |
| Ft. Lupton | 2,194 | 2,250 |
| [a]Louisville | 2,073 | 2,110 |
| Akron | 1,890 | 1,890 |
| Julesburg | 1,840 | 1,875 |
| Evans | 1,453 | 1,850 |
| Estes Park | 1,175 | 1,600 |
| Glendale | 468 | 1,600 |
| Windsor | 1,509 | 1,560 |
| Orchard Valley, Wyo. | 1,449 | 1,550 |
| Idaho Springs | 1,480 | 1,500 |
| Fox Farm, Wyo. | 1,371 | 1,450 |
| Castle Rock | 1,152 | 1,300 |
| Chappell, Neb. | 1,280 | 1,300 |
| Eaton | 1,267 | 1,300 |
| Federal Heights | 391 | 1,300 |
| Pine Bluffs, Wyo. | 1,121 | 1,121 |
| LaSalle | 1,075 | 1,085 |
| Berthoud | 1,014 | 1,014 |

**500 - 999**

| Town or City | 1960 | 1965[b] |
|---|---|---|
| Johnstown | 976 | 1,000 |
| [a]Bow-Mar | 748 | 975 |
| Erie | 875 | 900 |
| [a]Mountain View | 826 | 826 |
| Ault | 799 | 801 |
| Lyons | 706 | 765 |
| Deer Trail | 764 | 764 |

---

[a] Part of Metropolitan Denver

[b] Estimated by Colorado State Planning Division and Author

TABLE a-2--Continued

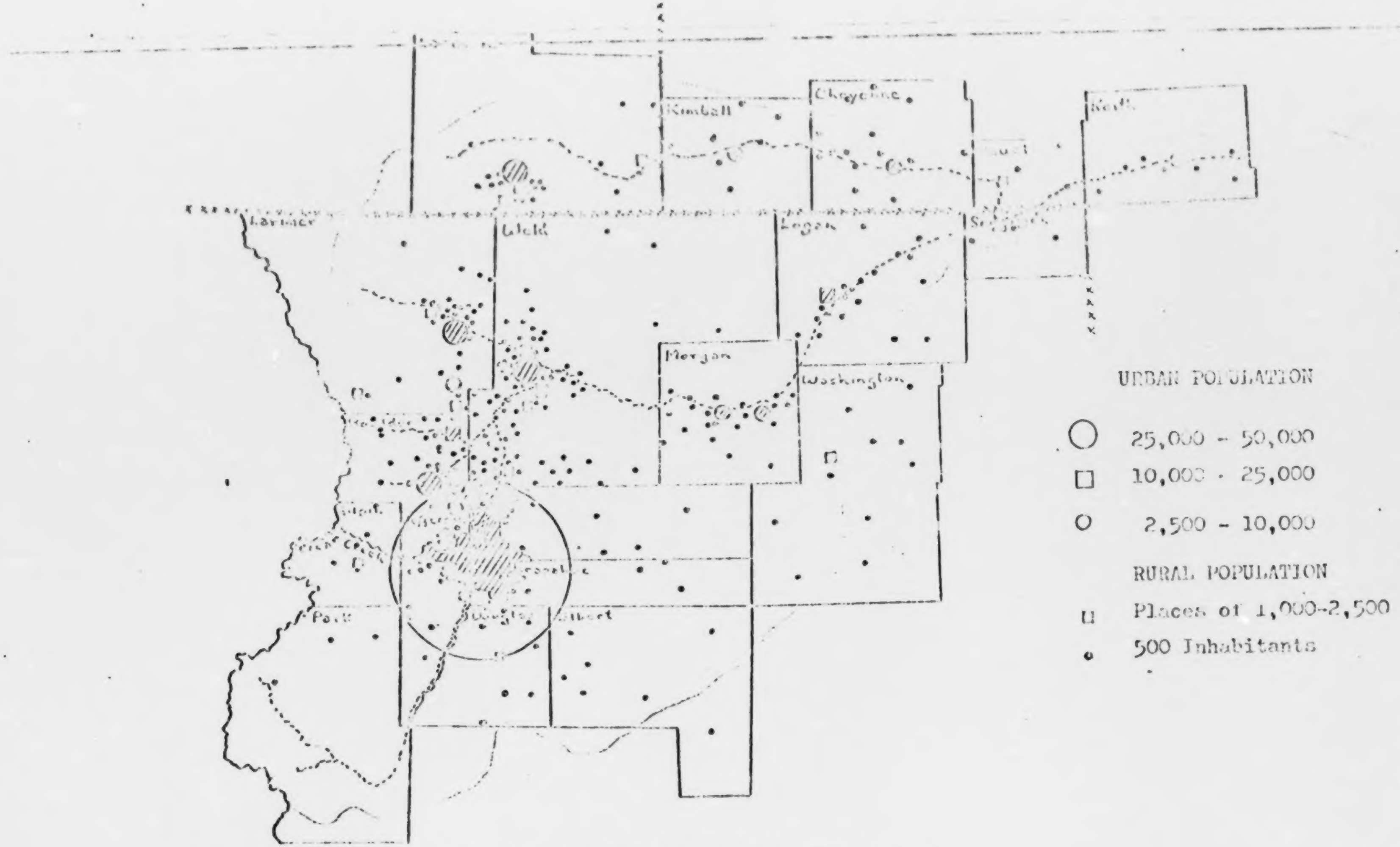
POPULATION OF TOWNS AND CITIES OF THE SOUTH PLATTE RIVER BASIN: 1960 and 1965

| Town or City | 1960 | 1965$^b$ |
|---|---|---|
| 500 - 999--Continued | | |
| Woodland Park | 666 | 666 |
| Milliken | 630 | 630 |
| Platteville | 582 | 625 |
| Wellington | 532 | 600 |
| [a]Greenwood Village | 572 | 590 |
| Frederick | 595 | 589 |
| Otis | 568 | 568 |
| Paxton, Neb. | 566 | 566 |
| Potter, Neb. | 554 | 554 |
| Cripple Creek | 614 | 550 |
| Ovid | 571 | 544 |
| Simla | 450 | 510 |
| Big Springs, Neb. | 506 | 506 |
| Dalton, Neb. | 503 | 503 |
| 300 - 499 | | |
| Hudson | 430 | 495 |
| Kersey | 378 | 430 |
| Pierce | 424 | 430 |
| Lodgepole, Neb. | 429 | 429 |
| Morrison | 426 | 426 |
| Bennett | 287 | 420 |
| Dix, Neb. | 420 | 420 |
| Fairplay | 404 | 414 |
| Keenesburg | 409 | 409 |
| Gilcrest | 357 | 400 |
| Log Lane Village | 310 | 400 |
| Victor | 434 | 400 |
| Columbine Valley | 225 | 385 |
| Brule, Neb. | 370 | 370 |
| Fleming | 384 | 364 |
| Dacona | 302 | 350 |
| Gurley, Neb. | 329 | 329 |
| Elizabeth | 326 | 323 |

| Town or City | 1960 | 1965$^b$ |
|---|---|---|
| 300 - 499--Continued | | |
| Georgetown | 307 | 321 |
| Nederland | 272 | 348 |
| Firestone | 276 | 300 |
| Sedgewick | 299 | 276 |
| Merino | 268 | 268 |
| Bushnell, Neb. | 266 | 266 |
| Central City | 250 | 255 |
| Crook | 209 | 230 |
| Burns, Wyo. | 225 | 225 |
| Green Mtn. Falls | 179 | 225 |
| Peetz | 218 | 225 |
| Nunn | 228 | 217 |
| Kiowa | 195 | 213 |
| Iliff | 204 | 210 |
| Superior | 173 | 200 |
| Mead | 192 | 192 |
| Albin, Wyo. | 172 | 172 |
| Black Hawk | 171 | 171 |
| Timnath | 150 | 160 |
| Hillrose | 157 | 157 |
| Jamestown | 107 | 151 |
| Garden City | 129 | 129 |
| Grover | 133 | 125 |
| Empire | 110 | 110 |
| Alma | 107 | 102 |
| 0 - 99 | | |
| Raymer | 91 | 98 |
| Silver Plume | 86 | 90 |
| Rosedale | 70 | 70 |
| Severance | 70 | 69 |
| Lakeside | 28 | 28 |
| Ward | 9 | 21 |
| Keota | 13 | 17 |

[a] Part of Metropolitan Denver

[b] Estimated by Colorado State Planning Division and Author


Larimer
Weld
Logan
Morgan
Washington
Kimball
Cheyenne
Deuel
Sedgwick
Keith
Clear Creek
Park
Douglas
Elbert
URBAN POPULATION
○ 25,000 - 50,000
□ 10,000 - 25,000
○ 2,500 - 10,000
RURAL POPULATION
□ Places of 1,000-2,500
● 500 Inhabitants

Source: Bureau of The Census, United States Maps, GE-50, No.1

Fig. a-1 --Population Distribution in The South Platte River Basin map of a larger area would show that this is a general pattern. A second phenomenon that the map makes readily apparent is the concentration of population along the eastern slope of the mountains. Again, a larger area map would show that this phenomenon continues south of our study area through Colorado Springs to Pueblo, Colorado. This seems to be the present and future trend as location to climate and other amenities of life supersede the need to locate to routes of easy land access and agricultural water supply.

A second general population characteristic of importance in the economic functioning of the area, population density, is better illustrated by Table a-3 and Figure a-2. A comparison of the South Platte River Basin with the states of Colorado, Nebraska, and Wyoming, and the Mountain and West North Central Census Regions reveals a striking difference in the number of people per square mile inhabiting these areas. The population density of the South Platte River Basin is nearly two and one half times that of the state of Colorado and more than five times as great as the Mountain Region. In addition, the density of population in the South Platte River Basin is increasing at a more rapid rate than is the surrounding area, and is rapidly approaching that of the United States as a whole. This is another way of saying that the South Platte River Basin is the center

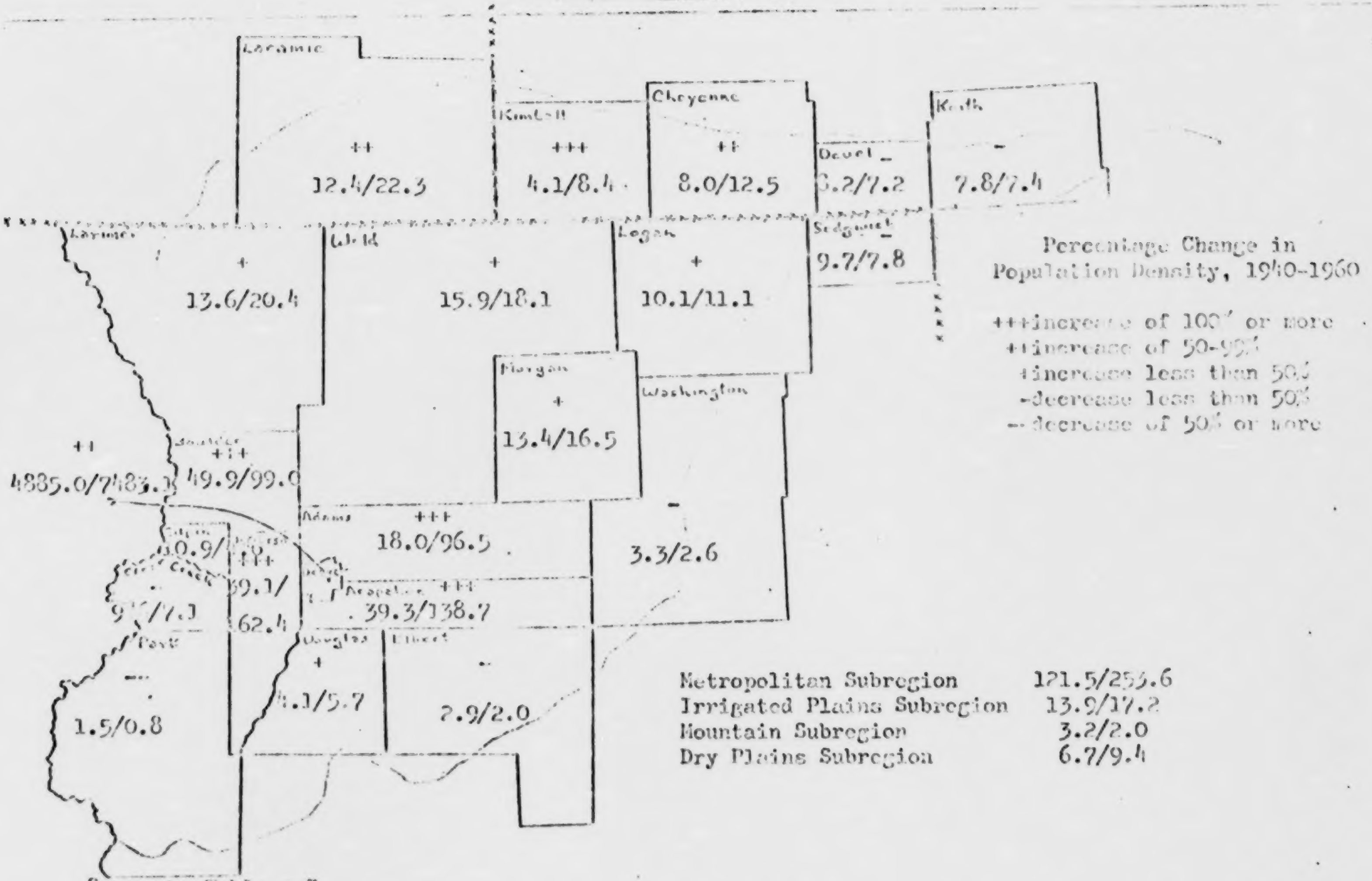
## TABLE a-3

## POPULATION DENSITY IN THE SOUTH PLATTE RIVER BASIN, SUBREGIONS, COUNTIES, AND RELATED REGIONS, 1920-1960

| Area | Area in Sq. Mi. | 1920 | 1930 | 1940 | 1950 | 1960 |
|---|---|---|---|---|---|---|
| Metropolitan | | | | | | |
| Adams[a] | 1,246 | 11.6 | 16.2 | 18.0 | 32.3 | 96.5 |
| Arapahoe[a] | 818 | 16.8 | 18.2 | 39.3 | 63.7 | 138.7 |
| Boulder | 750 | 42.5 | 43.3 | 49.9 | 64.4 | 99.0 |
| Denver[a] | 66 | 3,886.2 | 4,361.5 | 7,885.0 | 6,299.8 | 7,483.1 |
| Jefferson[a] | 785 | 18.3 | 27.8 | 39.1 | 70.9 | 162.4 |
| | 3,665 | 90.3 | 105.1 | 121.5 | 167.0 | 253.6 |
| Irrigated Plains | | | | | | |
| Larimer | 2,614 | 10.7 | 12.7 | 13.6 | 16.7 | 20.4 |
| Logan | 1,827 | 10.1 | 10.9 | 10.1 | 9.4 | 11.1 |
| Morgan | 1,282 | 12.6 | 14.3 | 13.4 | 14.1 | 16.5 |
| Weld | 4,004 | 13.5 | 16.2 | 15.9 | 16.9 | 18.1 |
| | 9,727 | 12.0 | 14.0 | 13.9 | 15.0 | 17.2 |
| Mountain | | | | | | |
| Clear Creek | 394 | 7.3 | 5.5 | 9.6 | 8.3 | 7.1 |
| Gilpin | 149 | 9.2 | 8.1 | 10.9 | 5.7 | 4.6 |
| Park | 2,166 | 0.9 | 0.9 | 1.5 | 0.9 | 0.8 |
| | 2,709 | 2.3 | 2.0 | 3.2 | 2.2 | 2.0 |
| Dry Plains | | | | | | |
| Douglas | 843 | 4.2 | 4.1 | 4.1 | 4.2 | 5.7 |
| Elbert | 1,864 | 3.7 | 3.5 | 2.9 | 2.4 | 2.0 |
| Sedgwick | 544 | 7.7 | 10.2 | 9.7 | 9.4 | 7.8 |
| Washington | 2,525 | 4.4 | 3.8 | 3.3 | 3.0 | 2.6 |
| Cheyenne | 1,186 | 7.1 | 8.6 | 8.0 | 10.2 | 12.5 |
| Deuel | 435 | 7.5 | 9.2 | 8.2 | 7.7 | 7.2 |
| Keith | 1,072 | 4.9 | 6.3 | 7.8 | 6.9 | 7.4 |
| Kimball | 953 | 4.7 | 5.9 | 4.1 | 4.5 | 8.4 |
| Laramie | 2,703 | 7.6 | 9.9 | 12.4 | 17.6 | 22.3 |
| | 12,125 | 5.6 | 6.4 | 6.7 | 7.9 | 9.4 |
| South Platte River Basin | 28,226 | 18.5 | 21.4 | 23.7 | 30.5 | 43.1 |
| Colorado | 103,884 | 9.1 | 10.0 | 10.8 | 12.8 | 16.9 |
| Nebraska | 76,612 | 16.9 | 18.0 | 17.2 | 17.3 | 18.4 |
| Wyoming | 97,411 | 2.0 | 2.3 | 2.6 | 3.0 | 3.4 |
| Mountain Region | 856,951 | 3.9 | 4.3 | 4.8 | 5.9 | 8.0 |
| West No. Cent. Reg. | 509,674 | 24.6 | 26.0 | 26.5 | 27.5 | 30.2 |
| United States | 3,548,974 | 29.9 | 34.7 | 37.2 | 42.6 | 50.5 |

[a] Area changing through annexation by City and County of Denver.

Source: Table a-4


Laramie
++
12.4/22.3
Kimball
+++
4.1/8.4
Cheyenne
++
8.0/12.5
Deuel
-
3.2/7.2
Keith
-
7.8/7.4
Larimer
+
13.6/20.4
Weld
+
15.9/18.1
Logan
+
10.1/11.1
Sedgwick
-
9.7/7.8
Morgan
+
13.4/16.5
Washington
-
3.3/2.6
++
4885.0/7483.1
Boulder
+++
49.9/99.0
Adams
+++
18.0/96.5
Gilpin
0.9/
Clear Creek
-
9.7/7.1
Jefferson
+++
39.1/
62.4
Arapahoe +++
39.3/138.7
Park
--
1.5/0.8
Douglas
+
4.1/5.7
Elbert
-
2.9/2.0
Percentage Change in
Population Density, 1940-1960
+++increase of 100% or more
++increase of 50-99%
+increase less than 50%
-decrease less than 50%
--decrease of 50% or more

| | |
|---|---|
| Metropolitan Subregion | 121.5/255.6 |
| Irrigated Plains Subregion | 13.9/17.2 |
| Mountain Subregion | 3.2/2.0 |
| Dry Plains Subregion | 6.7/9.4 |

Source: Table a-3

Fig. a-2 --Population Density in The South Platte River Basin 1940/1960

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of population and economic activity in the western Great Plains-Rocky Mountain Region.

Tables a-4, a-5 and a-6 draw together the basic information about population change in the South Platte River Basin and related areas. The number of people in the basin increased from half a million in 1920 to nearly one and a quarter million in 1960. The rate of increase each decade has been greater than that of any of the states in which portions of the basin lie, and greater than that for the United States. The rate of growth has actually been double the United States rate of growth since 1940. These figures also reveal a great diversity of growth rates within the South Platte River Basin. In order to better assess the magnitude and causes of these divergent movements within the basin, it has been subdivided into more homogenous subregions.

The Metropolitan Subregion dominates the basin in just about every respect. The bulk of the basin's population (75 percent) is located in the metropolitan counties and population is increasing at an increasingly faster rate than elsewhere in the basin. Denver County itself, as might be expected, is not growing at as fast a rate as it surrounding suburban counties.

The Irrigated Plains Subregion is the second-most populous section of the basin and the one in which the river itself has been most important in development as

## TABLE a-4

## POPULATION OF THE SOUTH PLATTE RIVER BASIN SUBREGIONS, COUNTIES, AND RELATED REGIONS, 1920-1960

| Area | 1920 | 1930 | 1940 | 1950 | 1960 |
|---|---|---|---|---|---|
| Metropolitan | | | | | |
| Adams | 14,430 | 20,245 | 22,481 | 40,234 | 120,296 |
| Arapahoe | 13,766 | 22,647 | 32,150 | 52,125 | 113,426 |
| Boulder | 31,861 | 32,456 | 37,438 | 48,296 | 74,254 |
| Denver | 256,491 | 287,861 | 322,412 | 415,786 | 493,887 |
| Jefferson | 14,400 | 21,810 | 30,725 | 55,687 | 127,520 |
| | 330,948 | 385,019 | 445,206 | 612,128 | 929,383 |
| Irrigated Plains | | | | | |
| Larimer | 27,872 | 33,137 | 35,539 | 43,554 | 53,343 |
| Logan | 18,427 | 19,946 | 18,370 | 17,187 | 20,302 |
| Morgan | 16,124 | 18,284 | 17,214 | 18,074 | 21,192 |
| Weld | 54,059 | 65,097 | 63,747 | 67,504 | 72,344 |
| | 116,482 | 136,464 | 134,870 | 146,309 | 167,181 |
| Mountain | | | | | |
| Clear Creek | 2,891 | 2,155 | 3,784 | 3,289 | 2,793 |
| Gilpin | 1,364 | 1,212 | 1,625 | 850 | 685 |
| Park | 1,977 | 2,052 | 3,272 | 1,870 | 1,882 |
| | 6,232 | 5,419 | 8,681 | 6,009 | 5,300 |
| Dry Plains | | | | | |
| Douglas | 3,517 | 3,498 | 3,496 | 3,507 | 4,816 |
| Elbert | 6,980 | 6,580 | 5,460 | 4,477 | 3,708 |
| Sedgwick | 4,207 | 5,580 | 5,294 | 5,095 | 4,242 |
| Washington | 11,208 | 9,591 | 8,336 | 7,520 | 6,625 |
| Cheyenne | 8,405 | 10,187 | 9,505 | 12,081 | 14,828 |
| Deuel | 3,282 | 3,992 | 3,580 | 3,330 | 3,125 |
| Keith | 5,294 | 6,721 | 8,333 | 7,449 | 7,958 |
| Kimball | 4,498 | 4,675 | 3,913 | 4,283 | 7,975 |
| Laramie | 20,699 | 26,845 | 33,651 | 47,662 | 60,149 |
| | 68,090 | 77,669 | 81,568 | 95,404 | 113,426 |
| South Platte River Basin | 521,752 | 604,571 | 670,325 | 859,850 | 1,215,290 |
| Colorado | 939,629 | 1,035,791 | 1,123,296 | 1,325,089 | 1,753,947 |
| Nebraska[a] | 1,296[a] | 1,378[a] | 1,316[a] | 1,326[a] | 1,411[a] |
| Wyoming[a] | 194[a] | 226[a] | 251[a] | 291[a] | 300[a] |
| Mountain Region[a] | 3,336[a] | 3,702[a] | 4,150[a] | 5,075[a] | 6,855[a] |
| West No. Cent. Reg.[a] | 12,544[a] | 13,297[a] | 13,517[a] | 14,061[a] | 15,394[a] |
| United States | 106,022 | 123,202 | 132,165 | 151,326 | 179,323 |

[a] In thousands

Source: Census of Population, Number of Inhabitants, various years.

## TABLE a-5

## DECENNIAL CHANGE IN POPULATION OF THE SOUTH PLATTE RIVER BASIN, SUBREGIONS, AND COUNTIES, 1920-1960

| Area | 1920-30 | 1930-40 | 1940-50 | 1950-60 |
|---|---|---|---|---|
| Metropolitan | | | | |
| Adams | 5,815 | 2,236 | 17,753 | 80,062 |
| Arapahoe | 8,881 | 9,503 | 19,975 | 61,301 |
| Boulder | 595 | 4,982 | 10,858 | 25,958 |
| Denver | 31,370 | 34,551 | 93,374 | 78,101 |
| Jefferson | 7,410 | 8,915 | 24,962 | 71,833 |
| | 54,071 | 60,187 | 166,922 | 317,255 |
| Irrigated Plains | | | | |
| Larimer | 5,265 | 2,402 | 8,015 | 9,789 |
| Logan | 1,519 | -1,576 | -1,183 | 3,115 |
| Morgan | 2,160 | -1,070 | 860 | 3,118 |
| Weld | 11,038 | -1,350 | 3,757 | 4,840 |
| | 19,982 | -1,594 | 11,449 | 20,862 |
| Mountain | | | | |
| Clear Creek | -736 | 1,629 | -495 | -496 |
| Gilpin | -152 | 413 | -775 | -165 |
| Park | 75 | 1,220 | -1,402 | -48 |
| | -813 | 3,262 | -2,672 | -709 |
| Dry Plains | | | | |
| Douglas | -19 | -2 | 11 | 309 |
| Elbert | -400 | -1,120 | -983 | -769 |
| Sedgwick | 1,373 | -286 | -199 | -853 |
| Washington | -1,617 | -1,255 | -816 | -895 |
| Cheyenne | 1,782 | -682 | 2,576 | 2,747 |
| Deuel | 710 | -412 | -250 | -205 |
| Keith | 1,427 | 1,612 | -884 | 509 |
| Kimball | 177 | -762 | 370 | 3,692 |
| Laramie | 6,146 | 6,806 | 14,011 | 12,487 |
| | 9,579 | 3,899 | 13,836 | 18,022 |
| South Platte River Basin | 82,819 | 65,754 | 189,525 | 355,440 |

Source: Table a-4

## TABLE a-6

## PERCENTAGE CHANGE IN POPULATION OF COUNTIES, SUBREGIONS, AND RELATED REGIONS, 1920-1960

| Area | 1920-30 | 1930-40 | 1940-50 | 1950-60 |
|---|---|---|---|---|
| Metropolitan | | | | |
| Adams | +40 | +11 | +79 | +199 |
| Arapahoe | +65 | +42 | +62 | +118 |
| Boulder | + 2 | +15 | +29 | + 54 |
| Denver | +12 | +12 | +29 | + 19 |
| Jefferson | +51 | +41 | +81 | +129 |
| | +16.3 | +15.6 | +37.5 | + 51.8 |
| Irrigated Plains | | | | |
| Larimer | +19 | + 7 | +23 | + 22 |
| Logan | + 8 | - 8 | - 6 | + 18 |
| Morgan | +13 | - 6 | + 5 | + 17 |
| Weld | +20 | - 2 | + 6 | + 7 |
| | +17.2 | - 1.2 | + 8.5 | + 14.3 |
| Mountain | | | | |
| Clear Creek | -26 | +76 | -13 | - 15 |
| Gilpin | -11 | +34 | -48 | - 19 |
| Park | + 4 | +59 | -43 | - 3 |
| | -13.0 | +60.2 | -30.8 | - 11.8 |
| Dry Plains | | | | |
| Douglas | - 1 | 0 | + 0.3 | + 37 |
| Elbert | - 6 | -17 | -18 | - 17 |
| Sedgwick | +33 | - 5 | - 4 | - 17 |
| Washington | -14 | -13 | -10 | - 12 |
| Cheyenne | +21 | - 7 | +27 | + 2 |
| Deuel | + 2 | -10 | - 7 | - 6 |
| Keith | +27 | +24 | -10 | + 7 |
| Kimball | + 4 | -16 | + 9 | + 86 |
| Laramie | +30 | +25 | +42 | + 26 |
| | +14.1 | + 5.0 | +17.3 | + 18.9 |
| South Platte River Basin | +15.9 | +10.9 | +28.3 | + 41.3 |
| Colorado | +10.2 | + 8.4 | +18.0 | + 32.4 |
| Nebraska | + 6.3 | - 4.5 | + 0.8 | + 6.5 |
| Wyoming | +16.0 | +11.2 | +15.9 | + 13.6 |
| Mountain Region | +11.0 | +12.1 | +22.3 | + 35.1 |
| West No. Cent. Region | + 6.0 | + 1.7 | + 4.0 | + 9.5 |
| United States | +16.2 | + 7.3 | +14.5 | + 18.5 |

Source: Table a-4

will be described in a later section on agricultural activities. The western portion of this subregion is the most populous as can be seen in the figures for Larimer and Weld Counties. Fort Collins with its expanding university is almost certain to become a part of the mountain front megalopolis, and its growing science-industry complex. It is possible that Greeley will be engulfed by this expanding metropolitan area also.

Population of the Mountain Subregion is moving in the opposite direction from the metropolitan and irrigated plains subregions with an upsurge in the thirties, perhaps a depression induced return to the land, being the only break in the outflow of people since the 1920's. The weekend outing and other recreation traffic in this area is certain to grow heavier as the adjacent metropolis grows larger, and this will end and perhaps even reverse the declining trend there.

In terms of population change, the Dry Plains Subregion is the least homogenous of the subregion. The general trend here is also a loss of people, largely connected with the urbanization trend discussed below. However, there are several exceptions. The population of Douglas County has increased rapidly since 1950 as the suburbs of Denver have started to overflow into the county. Although Douglas County is not now included in the Denver SMSA it undoubtedly will become a part of it in future years. It is in fact now a participating member of the Inter-County Regional Planning Commission of Denver. Laramie County in Wyoming with the city of Cheyenne is a major contrary element in population change in this subregion and perhaps could be better treated separately. It accounts for more than half the population in the subregion and must be kept in mind as an exception to the rest of the subregion. Cheyenne and Kimball Counties in Nebraska in which the towns of Sidney and Kimball are located also have growing populations contrary to other counties in the subregion.

Whether the population of a county is growing or falling seems to be closely correlated to whether or not it has a town of some size. Tables a-18 (Appendix B), a-7 and a-8 document this changing relationship between the urban and rural sectors of the population. The South Platte River Basin is quite highly urbanized with 83.1 percent of its people living in urban places in 1960. This is a considerably higher percentage than the states of Colorado, Nebraska, or Wyoming or the United States which has 69.9 percent of its population living in urban areas. In general, the census of 1960 defined the urban population as those people living in a community of 2,500 or more whether incorporated or unincorporated. This understates the degree of urbanization by omitting the people living in towns of less than 2,500.

## TABLE a-7

## PERCENTAGE CHANGE IN POPULATION FOR COUNTIES AND URBAN PLACES OF THE SOUTH PLATTE RIVER BASIN, 1940-50, 1950-60, 1940-60

| Area | 1940-50 | 1950-60 | 1940-60 |
|---|---|---|---|
| Metropolitan | | | |
| Adams | +79.0 | +199.0 | +435.1 |
| Aurora | +232.3 | +325.1 | +1312.5 |
| Brighton | +7.6 | +62.7 | +75.1 |
| Derby | - | +256.5 | - |
| Westminster | +215.7 | +721.5 | +2493.6 |
| Arapahoe | +62.1 | +117.6 | +252.8 |
| Englewood | +74.3 | +98.0 | +245.0 |
| Littleton | +50.5 | +304.7 | +509.2 |
| Sheridan | +140.9 | +107.5 | +400.0 |
| Boulder | +29.0 | +53.7 | +98.3 |
| Boulder | +54.3 | +88.6 | +191.1 |
| Lafayette | +1.9 | +25.0 | +27.3 |
| Longmont | +9.4 | +41.9 | +55.1 |
| Denver | +29.0 | +18.8 | +53.2 |
| Denver | +29.0 | +18.8 | +53.2 |
| Jefferson | +81.2 | +129.0 | +315.1 |
| Edgewater | +56.6 | +67.2 | +161.8 |
| Golden | +65.0 | +35.9 | +124.2 |
| Irrigated Plains | | | |
| Larimer | +22.6 | +22.5 | +50.1 |
| Fort Collins | +21.9 | +67.6 | +104.3 |
| Loveland | +10.2 | +43.7 | +58.4 |
| Logan | -6.4 | +18.1 | +10.5 |
| Sterling | +1.7 | +42.7 | +45.1 |
| Morgan | +5.0 | +17.2 | +23.1 |
| Brush | -2.0 | +49.0 | +45.9 |
| Fort Morgan | +8.2 | +38.8 | +51.1 |
| Weld | +5.9 | +7.2 | +13.5 |
| Greeley | +27.2 | +29.3 | +64.5 |

Source: Table a-18 (Appendix B)

## TABLE a-7--Continued

## PERCENTAGE CHANGE IN POPULATION FOR COUNTIES AND URBAN PLACES OF THE SOUTH PLATTE RIVER BASIN, 1940-50, 1950-60, 1940-60

| Area | 1940-50 | 1950-60 | 1940-60 |
|---|---|---|---|
| Mountain | | | |
| Clear Creek | -13.1 | -15.1 | -26.2 |
| Gilpin | -47.7 | -19.4 | -57.8 |
| Park | -42.8 | -2.6 | -44.3 |
| Dry Plains | | | |
| Douglas | +0.3 | +37.3 | +37.8 |
| Elbert | -18.0 | -17.2 | -32.1 |
| Sedgwick | -3.8 | -16.8 | -19.9 |
| Washington | -9.8 | -11.9 | -20.5 |
| Cheyenne | +27.1 | +22.7 | +56.0 |
| Sidney | +45.0 | +62.9 | +136.2 |
| Deuel | -7.0 | -6.2 | -12.7 |
| Keith | -10.6 | +6.8 | -4.5 |
| Ogallala | +9.4 | +23.4 | +34.5 |
| Kimball | +9.4 | +86.2 | +103.8 |
| Kimball | +18.7 | +114.1 | +154.1 |
| Laramie | +41.6 | +26.2 | +78.7 |
| Cheyenne | +42.1 | +36.2 | +93.6 |

Note: Six communities in the Metropolitan area: Thornton, Broomfield, Commerce Town, Arvada, Lakewood, and Wheatridge with a combined 1960 population of over 85,000, did not exist as such at the time of the 1950 census and hence no comparison is possible.

Source: Table a-18 (Appendix B)

## TABLE a-8

### PERCENTAGE OF POPULATION THAT IS URBAN AND RURAL IN COUNTIES, SUBREGIONS, AND RELATED REGIONS, 1940, 1950, 1960

| Area | 1940 |  |  |  | 1950 |  |  |  | 19 |  |
|---|---|---|---|---|---|---|---|---|---|---|
|  | Rural |  |  | Urban | Rural |  |  | Urban | Rural |  |
|  | Farm | Non-Farm | Total |  | Farm | Non-Farm | Total |  | Farm | Non-Farm |
| Metropolitan |  |  |  |  |  |  |  |  |  |  |
| Adams | 39.8 | 32.1 | 72.0 | 27.9 | 18.9 | 22.6 | 41.6 | 58.3 | 3.3 | 8.5 |
| Arapahoe | 16.3 | 49.8 | 66.2 | 33.7 | 5.9 | 15.6 | 21.5 | 78.4 | 1.4 | 6.9 |
| Boulder | 20.0 | 25.5 | 45.6 | 54.3 | 9.8 | 24.1 | 33.9 | 66.1 | 4.8 | 19.3 |
| Denver | 0 | 0 | 0 | 100.0 | 0 | 0 | 0 | 100.0 | 0 | 0 |
| Jefferson | 26.6 | 63.1 | 89.7 | 10.3 | 10.7 | 33.7 | 44.4 | 55.6 | 1.4 | 14.8 |
|  | 6.7 | 11.7 | 18.4 | 81.6 | 3.5 | 7.9 | 11.3 | 88.7 | 1.2 | 5.5 |
| Irrigated Plains |  |  |  |  |  |  |  |  |  |  |
| Larimer | 27.9 | 20.4 | 48.2 | 51.8 | 16.8 | 33.3 | 50.2 | 49.8 | 10.4 | 24.4 |
| Logan | 44.9 | 14.8 | 59.7 | 40.3 | 38.4 | 17.7 | 56.2 | 43.8 | 24.7 | 22.3 |
| Morgan | 46.7 | 24.9 | 71.6 | 28.4 | 42.8 | 27.8 | 70.6 | 29.4 | 25.3 | 22.8 |
| Weld | 45.3 | 29.6 | 74.9 | 25.1 | 38.5 | 33.3 | 69.8 | 30.2 | 26.8 | 36.8 |
|  | 40.8 | 24.6 | 65.4 | 34.6 | 32.6 | 29.9 | 62.5 | 37.5 | 21.1 | 29.3 |
| Mountain |  |  |  |  |  |  |  |  |  |  |
| Clear Creek | 3.9 | 96.1 | 100.0 | 0 | 3.5 | 96.5 | 100.0 | 0 | 2.0 | 98.0 |
| Gilpin | 10.4 | 89.6 | 100.0 | 0 | 8.2 | 91.8 | 100.0 | 0 | 0 | 100.0 |
| Park | 36.0 | 64.0 | 100.0 | 0 | 35.7 | 64.3 | 100.0 | 0 | 22.3 | 77.7 |
|  | 17.2 | 82.8 | 100.0 | 0 | 14.2 | 85.2 | 100.0 | 0 | 8.7 | 91.3 |
| Dry Plains |  |  |  |  |  |  |  |  |  |  |
| Douglas | 54.6 | 45.4 | 100.0 | 0 | 47.4 | 52.6 | 100.0 | 0 | 18.6 | 81.4 |
| Elbert | 72.5 | 27.5 | 100.0 | 0 | 68.1 | 31.9 | 100.0 | 0 | 57.8 | 42.2 |
| Sedgwick | 50.6 | 49.4 | 100.0 | 0 | 40.5 | 59.5 | 100.0 | 0 | 23.3 | 76.7 |
| Washington | 71.9 | 28.1 | 100.0 | 0 | 63.2 | 36.8 | 100.0 | 0 | 50.6 | 49.4 |
| Cheyenne | 46.9 | 17.4 | 64.4 | 35.6 | 29.1 | 30.2 | 59.3 | 40.7 | 20.0 | 26.0 |
| Deuel | 53.9 | 46.1 | 100.0 | 0 | 39.8 | 60.2 | 100.0 | 0 | 32.7 | 67.3 |
| Keith | 40.1 | 22.0 | 62.1 | 37.9 | 33.1 | 20.5 | 53.6 | 46.4 | 24.8 | 21.8 |
| Kimball | 44.4 | 55.6 | 100.0 | 0 | 38.1 | 61.9 | 100.0 | 0 | 15.8 | 29.2 |
| Laramie | 11.9 | 21.3 | 33.2 | 66.8 | 6.8 | 26.2 | 33.0 | 67.0 | 4.0 | 23.7 |
|  | 36.8 | 27.6 | 64.4 | 35.6 | 24.9 | 32.9 | 57.8 | 42.2 | 15.0 | 32.0 |
| South Platte River Basin | 17.4 | 17.2 | 34.6 | 65.4 | 10.9 | 14.9 | 25.8 | 74.2 | 5.2 | 11.7 |
| Colorado | 22.4 | 25.0 | 47.4 | 52.6 | 14.9 | 22.3 | 37.2 | 62.7 | 7.3 | 19.0 |
| Nebraska | 37.6 | 23.3 | 60.9 | 39.1 | 29.5 | 23.5 | 53.0 | 46.9 | 21.9 | 23.8 |
| Wyoming | 29.0 | 33.7 | 62.7 | 37.3 | 19.6 | 30.6 | 50.2 | 49.8 | 13.0 | 30.2 |
| United States | 22.9 | 20.5 |  | 56.5 | 15.2 | 20.8 | 36.0 | 64.0 | 7.5 | 22.6 |

Source: Same as Table a-7

## TABLE a-8

## PERCENTAGE OF POPULATION THAT IS URBAN AND RURAL IN COUNTIES, SUBREGIONS, AND RELATED REGIONS, 1940, 1950, 1960

| 1940 | | | | 1950 | | | | 1960 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rural | | | Urban | Rural | | | Urban | Rural | | | Urban |
| Farm | Non-Farm | Total | | Farm | Non-Farm | Total | | Farm | Non-Farm | Total | |
| 39.8 | 32.1 | 72.0 | 27.9 | 18.9 | 22.6 | 41.6 | 58.3 | 3.3 | 8.5 | 11.9 | 88.0 |
| 16.3 | 49.8 | 66.2 | 33.7 | 5.9 | 15.6 | 21.5 | 78.4 | 1.4 | 6.9 | 8.3 | 91.6 |
| 20.0 | 25.5 | 45.6 | 54.3 | 9.8 | 24.1 | 33.9 | 66.1 | 4.8 | 19.3 | 24.1 | 75.9 |
| 0 | 0 | 0 | 100.0 | 0 | 0 | 0 | 100.0 | 0 | 0 | 0 | 100.0 |
| 26.6 | 63.1 | 89.7 | 10.3 | 10.7 | 33.7 | 44.4 | 55.6 | 1.4 | 14.8 | 16.1 | 83.9 |
| 6.7 | 11.7 | 18.4 | 81.6 | 3.5 | 7.9 | 11.3 | 88.7 | 1.2 | 5.5 | 6.7 | 93.3 |
| 27.9 | 20.4 | 48.2 | 51.8 | 16.8 | 33.3 | 50.2 | 49.8 | 10.4 | 24.4 | 34.8 | 65.2 |
| 44.9 | 14.8 | 59.7 | 40.3 | 38.4 | 17.7 | 56.2 | 43.8 | 24.7 | 22.3 | 47.0 | 53.0 |
| 46.7 | 24.9 | 71.6 | 28.4 | 42.8 | 27.8 | 70.6 | 29.4 | 25.3 | 22.8 | 48.1 | 51.9 |
| 45.3 | 29.6 | 74.9 | 25.1 | 38.5 | 33.3 | 69.8 | 30.2 | 26.8 | 36.8 | 63.6 | 36.4 |
| 40.8 | 24.6 | 65.4 | 34.6 | 32.6 | 29.9 | 62.5 | 37.5 | 21.1 | 29.3 | 50.5 | 49.5 |
| 3.9 | 96.1 | 100.0 | 0 | 3.5 | 96.5 | 100.0 | 0 | 2.0 | 98.0 | 100.0 | 0 |
| 10.4 | 89.6 | 100.0 | 0 | 8.2 | 91.8 | 100.0 | 0 | 0 | 100.0 | 100.0 | 0 |
| 36.0 | 64.0 | 100.0 | 0 | 35.7 | 64.3 | 100.0 | 0 | 22.3 | 77.7 | 100.0 | 0 |
| 17.2 | 82.8 | 100.0 | 0 | 14.2 | 85.2 | 100.0 | 0 | 8.7 | 91.3 | 100.0 | 0 |
| 54.6 | 45.4 | 100.0 | 0 | 47.4 | 52.6 | 100.0 | 0 | 18.6 | 81.4 | 100.0 | 0 |
| 72.5 | 27.5 | 100.0 | 0 | 68.1 | 31.9 | 100.0 | 0 | 57.8 | 42.2 | 100.0 | 0 |
| 50.6 | 49.4 | 100.0 | 0 | 40.5 | 59.5 | 100.0 | 0 | 23.3 | 76.7 | 100.0 | 0 |
| 71.9 | 28.1 | 100.0 | 0 | 63.2 | 36.8 | 100.0 | 0 | 50.6 | 49.4 | 100.0 | 0 |
| 46.9 | 17.4 | 64.4 | 35.6 | 29.1 | 30.2 | 59.3 | 40.7 | 20.0 | 26.0 | 46.0 | 54.0 |
| 53.9 | 46.1 | 100.0 | 0 | 39.8 | 60.2 | 100.0 | 0 | 32.7 | 67.3 | 100.0 | 0 |
| 40.1 | 22.0 | 62.1 | 37.9 | 33.1 | 20.5 | 53.6 | 46.4 | 24.8 | 21.8 | 46.6 | 53.4 |
| 44.4 | 55.6 | 100.0 | 0 | 38.1 | 61.9 | 100.0 | 0 | 15.8 | 29.2 | 45.0 | 55.0 |
| 11.9 | 21.3 | 33.2 | 66.8 | 6.8 | 26.2 | 33.0 | 67.0 | 4.0 | 23.7 | 27.7 | 72.3 |
| 36.8 | 27.6 | 64.4 | 35.6 | 24.9 | 32.9 | 57.8 | 42.2 | 15.0 | 32.0 | 47.0 | 53.0 |
| 17.4 | 17.2 | 34.6 | 65.4 | 10.9 | 14.9 | 25.8 | 74.2 | 5.2 | 11.7 | 16.9 | 83.1 |
| 22.4 | 25.0 | 47.4 | 52.6 | 14.9 | 22.3 | 37.2 | 62.7 | 7.3 | 19.0 | 26.3 | 73.7 |
| 37.6 | 23.3 | 60.9 | 39.1 | 29.5 | 23.5 | 53.0 | 46.9 | 21.9 | 23.8 | 45.7 | 54.3 |
| 29.0 | 33.7 | 62.7 | 37.3 | 19.6 | 30.6 | 50.2 | 49.8 | 13.0 | 30.2 | 43.2 | 56.8 |
| 22.9 | 20.5 | | 56.5 | 15.2 | 20.8 | 36.0 | 64.0 | 7.5 | 22.6 | 30.1 | 69.9 |

as Table a-7

If we assume that rural non-farm population is mostly suburban or other small town dwellers, the South Platte River Basin was 94.8 percent urbanized in 1960. The counties of the Metropolitan Subregion grew fastest in this respect in the 20 year 1940-60 period. The population of Jefferson County, for example, was only 10.3 percent urban in 1940, but 83.9 percent urban in 1960. Here again a truer though less dramatic picture is given by including the rural non-farm population as townspeople. By this definition, the town dwelling population of Jefferson County grew from 73.4 percent in 1940 to 98.7 percent in 1960.

The movement towards towns was substantial in the Irrigated Plains Subregion and even in the Mountain and Dry Plains Subregions where general population growth was the slowest or even negative. In these smaller population counties the urban population measured by the census definition remains zero. Yet the people living in small towns as seen in the rural non-farm classification has become a substantially larger portion of the total population. Gilpin County in the Mountain Subregion for example had zero urban population, in 1960, but zero rural farm population also. Its population is 100 percent small town dwellers. Similarly each of the other nine counties in the South Platte River Basin which show zero urban population experienced growth in proportion of the population residing in small towns. In these areas the urbanization trend is seen in the change between rural farm and rural non-farm population since none of the communities involved is large enough to qualify as an urban place.

The farm and ranch population declined proportionately and absolutely in every county in the South Platte River Basin, without exception. This is a trend that has been under way since 1920. The three mountain counties were the only ones in which the size of the towns also declined although this was at a slower rate than the decline of the farm population. There is a reasonably well-defined trend towards a decline in the smallest towns as improved transportation and the better facilities of the correspondingly closer larger towns erode their reason for existence.

A quick comparison of population of all the villages, towns, and cities of the South Platte River Basin as listed in the 1940, 1950, 1960 censuses shows the following relationships between towns of various sizes and the total population of the basin.

| Size of Town | Percent of Total SPRB Population | | |
|---|---|---|---|
| | 1940 | 1950 | 1960 |
| Under 500 population | 1.9 | 1.4 | 1.0 |
| 500-1,000 " | 2.1 | 1.6 | 1.0 |
| 1,000-2,500 " | 3.6 | 3.0 | 2.3 |
| 2,500-5,000 " | 3.3 | 2.5 | 2.2 |
| over 5,000 " | 62.2 | 65.6 | 73.1 |

These figures understate the magnitude and rate of change of the larger cities because there are residential subdivisions surrounding these cities which are not organized as towns nor included with the city limits of the city of which they are really a part.

For the twenty-year period, the share of total population change of the South Platte River Basin by the various components was:

| | |
|---|---|
| Urban places | 104.8% |
| Rural non-farm places | 4.8% |
| Rural farm places | -9.7% |
| | 100.0% |

The dominance of Metropolitan Denver in the South Platte River Basin is seen in the fact that 8 out of 10 people living in the basin live in Metropolitan Denver. A comparison of metropolitan Denver's share of the South Platte River Basin population over the years indicates that this dominance is an increasing trend.

| | |
|---|---|
| 1920 | 63.4% |
| 1930 | 63.7 |
| 1940 | 66.4 |
| 1950 | 71.2 |
| 1960 | 76.5 |
| 1965 (est) | 77.4 |

Donald J. Bogue in his study Components of Population Change, 1940-50: Estimates of Net Migration and Natural Increase for Each Standard Metropolitan Area and State Economic Area (Scripps Foundation for Research in Population Problems, 1959) found that this was a national trend.[1]

The percentage change in population between 1940 and 1960 further illustrates this point:

| | |
|---|---|
| Metropolitan Subbasin | +54% |
| Irrigated Plains Subbasin | +12% |
| Mountain Subbasin | -20% |
| Dry Plains Subbasin | +20% |

The increase in the Dry Plains Subbasin was entirely due to growth in the towns of Cheyenne, Kimball, and Sidney and Denver suburbs in Douglas County. The other five counties in the subbasin lost population. Table a-9, the ratio of county and subregion population to total state population, shows that only the metropolitan counties and the Wyoming and Nebraska counties with major towns have a growing proportion of the state's population.

Tables a-10 and a-11 break the population of the region and subregions down by age and sex. It can be seen that the once unbalanced sex ratio of more men than women that was characteristic of the mountain west no longer applies to the South Platte River Basin at least, although there was some trace of it in the Mountain Subregion as late as 1940 and in the older age groups in that subregion in 1950 and 1960. There is a noticeable difference in age groupings between the subregions. The Metropolitan Subregion has a greater share of its population in the 25 to 44 years of age groups than the other subregions or states. The Irrigated Plains subregion has a larger number in the 15-24 age group but fewer in the 25-34 age group. It also has a larger proportion in the over 65 age group than the average. A somewhat similar grouping is seen in the Dry Plains counties, though disguised by contrary age groupings in the four counties with growing towns. The most pronounced contrast to the youthfulness of the Metropolitan Subregion is provided by the Mountain Subregion where the share of the population under 34 years old is abnormally small, the 35-44 age group about average, and the over 45 and over 65 age groups disproportionately large. The median age of 37.0 in the Mountain Subregion compares to 27.9 for the state of Colorado and 26.3 for the Metropolitan Region. The South Platte River Basin as a whole has a somewhat younger population than the surrounding states.

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[1] Pietro Balestra and N. Koteswara Rao, Basic Economic Projections (Menlo Park, California: Stanford Research Institute, 1965), p. 38, found this one of the three basic trends in interstate migration in the United States in recent decades. These three are: (1) from the southeast to the north, (2) from the east and midwest to the far west, and (3) from rural areas to the cities. They felt that these movements are based primarily on income differentials (relative imbalance in factor supply). Their population projections are essentially based on a correlation to projected income levels.

## TABLE a-9

## RATIO OF SOUTH PLATTE RIVER BASIN, SUBREGION AND COUNTY POPULATION TO TOTAL STATE POPULATION 1920-1960

| Area | 1920 | 1930 | 1940 | 1950 | 1960 |
|---|---|---|---|---|---|
| Metropolitan | | | | | |
| Adams | .015 | .020 | .020 | .030 | .068 |
| Arapahoe | .015 | .022 | .029 | .039 | .065 |
| Boulder | .034 | .031 | .033 | .036 | .042 |
| Denver | .273 | .278 | .287 | .314 | .282 |
| Jefferson | .015 | .021 | .027 | .042 | .073 |
| | .352 | .372 | .396 | .462 | .530 |
| Irrigated Plains | | | | | |
| Larimer | .030 | .032 | .032 | .033 | .030 |
| Logan | .020 | .019 | .016 | .013 | .012 |
| Morgan | .017 | .018 | .015 | .014 | .012 |
| Weld | .058 | .063 | .057 | .051 | .041 |
| | .124 | .132 | .120 | .110 | .095 |
| Mountain | | | | | |
| Clear Creek | .003 | .002 | .003 | .002 | .002 |
| Gilpin | .001 | .001 | .001 | .001 | .0003 |
| Park | .002 | .002 | .003 | .001 | .001 |
| | .007 | .005 | .008 | .004 | .003 |
| Dry Plains | | | | | |
| Douglas | .004 | .003 | .003 | .003 | .003 |
| Elbert | .007 | .006 | .005 | .003 | .002 |
| Sedgwick | .004 | .005 | .005 | .004 | .002 |
| Washington | .012 | .009 | .007 | .006 | .004 |
| Cheyenne[a] | .006 | .007 | .007 | .009 | .010 |
| Deuel[a] | .002 | .003 | .003 | .002 | .002 |
| Keith[a] | .004 | .005 | .006 | .006 | .006 |
| Kimball[a] | .003 | .004 | .003 | .003 | .006 |
| Laramie[b] | .107 | .119 | .134 | .164 | .200 |
| | .149[c] | .161[c] | .173[c] | .200[c] | .235[c] |
| South Platte River Basin | .555 | .584 | .597 | .649 | .693 |
| Colorado | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

[a] Share of total population of State of Nebraska in which these counties are located.

[b] Share of total population of State of Wyoming in which this county is located.

[c] Share of State of Colorado

Source: Table a-4

AGE AND SEX OF THE POPULAT

| Area | 1940 | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Under 5 | | 5-14 | | 15-24 | | 25-34 | | 35-44 | | 45-54 | | 55-64 | | 65 & over | | Un |
| | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M |
| Metropolitan | 4.8 | 4.6 | 9.3 | 9.2 | 9.7 | 8.5 | 8.0 | 7.4 | 7.3 | 6.2 | 6.3 | 5.0 | 4.3 | 3.2 | 3.6 | 2.6 | 7.3 |
| Adams | 4.9 | 4.6 | 8.8 | 8.6 | 9.8 | 7.9 | 8.4 | 8.0 | 7.2 | 6.5 | 5.8 | 5.3 | 3.9 | 3.7 | 3.3 | 3.3 | 7.4 |
| Arapahoe | 4.0 | 3.8 | 5.4 | 8.0 | 8.9 | 8.7 | 7.2 | 7.4 | 6.1 | 6.6 | 6.0 | 6.4 | 4.8 | 4.8 | 4.4 | 4.7 | 4.7 |
| Boulder | 3.3 | 3.2 | 6.7 | 6.8 | 7.8 | 8.9 | 8.1 | 8.9 | 7.2 | 7.8 | 6.5 | 6.5 | 4.9 | 4.6 | 4.0 | 4.7 | 5.1 |
| Denver | 4.3 | 3.6 | 8.8 | 7.8 | 8.5 | 8.1 | 7.5 | 8.1 | 7.5 | 7.3 | 6.6 | 5.8 | 4.4 | 4.2 | 3.7 | 3.6 | 5. |
| Jefferson | 3.6 | 3.5 | 7.3 | 7.2 | 8.0 | 8.7 | 8.0 | 8.6 | 7.1 | 7.5 | 6.4 | 6.3 | 4.6 | 4.6 | 4.0 | 4.4 | 5. |
| Irrigated Plains | 4.2 | 4.1 | 8.8 | 8.6 | 9.0 | 8.8 | 7.0 | 7.2 | 5.8 | 6.2 | 5.7 | 6.0 | 4.8 | 4.7 | 4.6 | 4.4 | 5. |
| Larimer | 5.0 | 4.9 | 10.0 | 10.3 | 10.1 | 9.6 | 7.0 | 7.2 | 5.8 | 5.7 | 5.7 | 5.3 | 4.3 | 3.3 | 3.1 | 2.3 | 6. |
| Logan | 5.1 | 5.1 | 10.3 | 9.9 | 9.4 | 8.8 | 7.4 | 7.4 | 5.9 | 5.7 | 5.3 | 4.8 | 4.3 | 3.7 | 3.7 | 3.2 | 5. |
| Morgan | 5.1 | 5.0 | 10.1 | 9.9 | 9.7 | 9.3 | 7.5 | 7.4 | 5.8 | 5.4 | 5.6 | 5.0 | 4.3 | 3.5 | 3.4 | 2.8 | 6. |
| Weld | 4.9 | 4.7 | 9.8 | 9.6 | 9.5 | 9.2 | 7.3 | 7.3 | 5.7 | 5.7 | 5.6 | 5.3 | 4.4 | 3.8 | 3.7 | 3.2 | 5. |
| Mountain | 4.8 | 4.7 | 8.4 | 6.3 | 7.3 | 7.6 | 9.3 | 8.4 | 9.1 | 6.0 | 6.8 | 4.2 | 5.4 | 3.9 | 4.0 | 3.7 | 4. |
| Clear Creek | 4.4 | 4.5 | 6.9 | 8.5 | 6.5 | 7.1 | 8.2 | 7.4 | 8.6 | 5.2 | 7.5 | 5.6 | 7.7 | 4.1 | 4.4 | 3.6 | 4. |
| Gilpin | 5.0 | 3.8 | 7.8 | 7.4 | 8.7 | 7.8 | 10.9 | 8.6 | 9.0 | 6.0 | 6.5 | 4.8 | 5.1 | 3.0 | 3.6 | 1.6 | 5. |
| Park | 4.8 | 4.3 | 7.9 | 6.0 | 7.7 | 7.6 | 9.7 | 8.3 | 8.9 | 5.8 | 6.8 | 4.7 | 5.7 | 3.6 | 3.9 | 2.9 | 4. |
| Dry Plains | 4.1 | 4.4 | 8.2 | 7.9 | 9.1 | 7.4 | 8.1 | 7.0 | 7.7 | 7.0 | 7.1 | 5.5 | 5.0 | 4.3 | 4.1 | 3.1 | 4. |
| Douglas | 5.1 | 4.5 | 9.7 | 9.3 | 8.9 | 8.0 | 8.5 | 7.0 | 7.0 | 5.5 | 5.3 | 4.5 | 5.3 | 4.0 | 4.3 | 2.9 | 4. |
| Elbert | 5.0 | 5.0 | 9.8 | 9.6 | 9.8 | 9.2 | 8.0 | 7.2 | 6.3 | 5.5 | 5.9 | 5.3 | 4.5 | 3.3 | 3.0 | 2.5 | 6. |
| Sedgwick | 4.9 | 5.0 | 10.3 | 9.5 | 10.1 | 9.1 | 7.6 | 6.3 | 6.0 | 5.2 | 6.3 | 5.1 | 4.9 | 3.8 | 3.4 | 2.4 | 5. |
| Washington | 4.5 | 4.6 | 9.6 | 9.6 | 9.4 | 7.5 | 7.1 | 7.1 | 6.4 | 6.2 | 6.7 | 6.1 | 4.3 | 3.2 | 3.0 | 2.3 | 7. |
| Cheyenne | 4.5 | 4.1 | 9.8 | 8.3 | 10.4 | 9.6 | 7.5 | 7.2 | 6.3 | 5.6 | 6.5 | 6.0 | 4.7 | 3.8 | 3.0 | 2.5 | 5. |
| Deuel | 5.2 | 5.3 | 9.8 | 8.8 | 10.0 | 9.1 | 9.8 | 8.5 | 7.1 | 5.5 | 5.5 | 4.2 | 3.4 | 2.9 | 2.9 | 2.1 | 6. |
| Keith | 4.3 | 3.8 | 9.6 | 8.6 | 9.5 | 8.9 | 8.1 | 7.0 | 6.4 | 5.5 | 6.4 | 6.0 | 5.2 | 3.8 | 3.6 | 3.2 | 6. |
| Kimball | 3.7 | 3.6 | 7.1 | 7.0 | 16.0 | 7.9 | 11.0 | 8.4 | 7.5 | 6.6 | 6.0 | 4.8 | 3.5 | 2.8 | 2.1 | 2.0 | 5. |
| Laramie | 4.3 | 4.2 | 8.6 | 8.2 | 12.3 | 8.6 | 9.3 | 7.7 | 7.0 | 5.9 | 6.1 | 5.1 | 4.1 | 3.2 | 2.8 | 2.3 | 5. |
| South Platte River Basin | 4.0 | 7.8 | 8.0 | 7.8 | 8.8 | 8.8 | 8.0 | 8.2 | 6.9 | 6.9 | 6.2 | 6.0 | 4.6 | 4.3 | 3.8 | 3.9 | 5. |
| Colorado | 4.6 | 4.4 | 8.9 | 8.7 | 10.1 | 8.7 | 8.8 | 7.9 | 7.3 | 6.3 | 6.8 | 5.1 | 4.4 | 2.9 | 2.9 | 2.1 | 5. |
| Nebraska | 4.1 | 3.9 | 8.8 | 8.4 | 8.8 | 8.9 | 7.4 | 7.5 | 6.6 | 6.6 | 6.3 | 6.0 | 4.5 | 4.2 | 4.0 | 3.9 | 5. |
| Wyoming | 4.4 | 4.2 | 8.6 | 8.4 | 8.7 | 8.8 | 7.8 | 7.9 | 6.6 | 6.5 | 6.1 | 5.6 | 4.4 | 4.1 | 2.3 | 3.7 | 6. |
| United States | 8.1 | 7.9 | 17.2 | 16.8 | 18.0 | 18.4 | 16.0 | 16.5 | 13.9 | 14.0 | 12.1 | 11.5 | 8.2 | 7.9 | 6.7 | 7.0 | 11 |

Source: Census of Population, General Population Characteristics, 1960 (Table 26), 1950

TABLE a-10

AGE AND SEX OF THE POPULATION OF THE SOUTH PLATTE RIVER BASIN, SUBREGIONS, COUNTIES, AND RELATED REGION
BY PERCENTAGE, 1940, 1950, 1960

| | | | | | | 1950 | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 45-54 | | 55-64 | | 65 & over | | Under 5 | | 5-14 | | 15-24 | | 25-34 | | 35-44 | | 45-54 | | 55-64 | | 65 & over | | Un |
| M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M |
| 6.3 | 5.0 | 4.3 | 3.2 | 3.6 | 2.6 | 7.3 | 6.7 | 9.3 | 8.4 | 9.1 | 6.9 | 10.4 | 9.6 | 7.2 | 6.2 | 4.7 | 3.9 | 3.3 | 2.4 | 2.5 | 2.1 | 8.6 |
| 5.8 | 5.3 | 3.9 | 3.7 | 3.3 | 3.3 | 7.4 | 7.1 | 8.8 | 8.3 | 5.9 | 7.3 | 9.7 | 9.9 | 7.0 | 6.4 | 5.0 | 4.4 | 3.4 | 3.3 | 3.0 | 3.2 | 7.0 |
| 6.0 | 6.4 | 4.8 | 4.8 | 4.4 | 4.7 | 4.7 | 4.6 | 6.6 | 6.4 | 12.4 | 10.4 | 7.9 | 6.9 | 5.5 | 5.9 | 4.7 | 5.2 | 4.1 | 4.5 | 4.6 | 5.4 | 5.6 |
| 6.5 | 6.5 | 4.9 | 4.6 | 4.0 | 4.7 | 5.1 | 5.0 | 6.5 | 6.4 | 6.8 | 7.4 | 8.5 | 8.9 | 6.9 | 7.5 | 5.7 | 6.2 | 4.6 | 5.0 | 4.1 | 5.3 | 5. |
| 6.6 | 5.8 | 4.4 | 4.2 | 3.7 | 3.6 | 5.9 | 5.8 | 9.0 | 8.4 | 7.5 | 6.4 | 8.3 | 8.8 | 7.8 | 7.7 | 5.6 | 5.2 | 3.8 | 3.4 | 3.1 | 3.2 | 6. |
| 6.4 | 6.3 | 4.6 | 4.6 | 4.0 | 4.4 | 5.5 | 5.4 | 7.1 | 6.9 | 7.4 | 7.5 | 8.6 | 8.8 | 6.9 | 7.2 | 5.5 | 5.7 | 4.3 | 4.5 | 3.8 | 4.8 | 6. |
| 5.7 | 6.0 | 4.8 | 4.7 | 4.6 | 4.4 | 5.2 | 5.1 | 7.7 | 7.5 | 9.7 | 8.0 | 7.6 | 7.1 | 6.0 | 6.0 | 5.0 | 5.4 | 4.4 | 4.8 | 5.1 | 5.3 | 5. |
| 5.7 | 5.3 | 4.3 | 3.3 | 3.1 | 2.3 | 6.1 | 6.0 | 9.7 | 9.1 | 7.8 | 7.7 | 7.6 | 7.1 | 6.1 | 5.9 | 4.8 | 4.8 | 4.4 | 4.4 | 4.5 | 4.0 | 6. |
| 5.3 | 4.8 | 4.3 | 3.7 | 3.7 | 3.2 | 5.9 | 5.7 | 10.3 | 9.7 | 7.6 | 7.9 | 6.9 | 6.7 | 6.6 | 6.3 | 5.2 | 4.8 | 4.0 | 3.7 | 4.6 | 4.1 | 6. |
| 5.6 | 5.0 | 4.3 | 3.5 | 3.4 | 2.8 | 6.0 | 5.8 | 9.8 | 9.3 | 8.5 | 8.6 | 7.2 | 7.0 | 6.3 | 6.2 | 4.8 | 4.6 | 4.1 | 3.8 | 4.2 | 3.9 | 5. |
| 5.6 | 5.3 | 4.4 | 3.8 | 3.7 | 3.2 | 5.8 | 5.6 | 9.2 | 8.8 | 8.7 | 8.2 | 7.4 | 7.0 | 6.2 | 6.1 | 4.9 | 4.9 | 4.2 | 4.1 | 4.5 | 4.3 | 5. |
| 6.8 | 4.2 | 5.4 | 3.9 | 4.0 | 3.7 | 4.9 | 4.8 | 8.4 | 8.3 | 6.1 | 5.8 | 7.1 | 7.2 | 8.1 | 7.9 | 6.8 | 5.3 | 4.9 | 4.5 | 4.5 | 5.3 | 3. |
| 7.5 | 5.6 | 7.7 | 4.1 | 4.4 | 3.6 | 4.1 | 3.0 | 7.8 | 7.3 | 5.2 | 5.8 | 4.9 | 5.0 | 7.5 | 7.0 | 9.6 | 5.8 | 7.4 | 6.2 | 7.2 | 6.0 | 5. |
| 6.5 | 4.8 | 5.1 | 3.0 | 3.6 | 1.6 | 5.1 | 5.3 | 8.1 | 6.1 | 6.5 | 5.6 | 7.1 | 7.0 | 8.6 | 7.9 | 8.3 | 5.4 | 5.4 | 4.2 | 6.0 | 3.4 | 4. |
| 6.8 | 4.7 | 5.7 | 3.6 | 3.9 | 2.9 | 4.8 | 4.7 | 8.2 | 7.4 | 6.1 | 5.7 | 6.8 | 6.8 | 8.2 | 7.8 | 7.6 | 5.4 | 5.4 | 4.6 | 5.3 | 4.8 | 4. |
| 7.1 | 5.5 | 5.0 | 4.3 | 4.1 | 3.1 | 4.6 | 5.4 | 9.1 | 7.7 | 6.1 | 6.7 | 6.8 | 6.7 | 7.6 | 6.8 | 7.1 | 6.5 | 5.6 | 4.1 | 4.9 | 4.2 | 5. |
| 5.3 | 4.5 | 5.3 | 4.0 | 4.3 | 2.9 | 4.8 | 5.1 | 10.5 | 9.9 | 8.0 | 6.4 | 6.5 | 6.1 | 7.6 | 6.7 | 6.1 | 5.2 | 5.1 | 3.6 | 4.5 | 3.6 | 5. |
| 5.9 | 5.3 | 4.5 | 3.3 | 3.0 | 2.5 | 6.3 | 6.0 | 10.0 | 9.9 | 7.3 | 7.3 | 7.4 | 7.0 | 6.6 | 6.2 | 5.5 | 4.7 | 4.2 | 3.9 | 4.1 | 3.5 | 5. |
| 6.3 | 5.1 | 4.9 | 3.8 | 3.4 | 2.4 | 5.8 | 5.9 | 10.1 | 9.6 | 8.1 | 7.4 | 7.9 | 7.3 | 6.8 | 5.4 | 5.0 | 4.5 | 4.6 | 3.8 | 4.4 | 3.4 | 5. |
| 6.7 | 6.1 | 4.3 | 3.2 | 3.0 | 2.3 | 7.0 | 6.0 | 8.4 | 8.6 | 7.7 | 7.9 | 8.5 | 7.7 | 6.3 | 5.9 | 5.8 | 4.9 | 4.9 | 4.2 | 3.5 | 2.7 | 6. |
| 6.5 | 6.0 | 4.7 | 3.8 | 3.0 | 2.5 | 5.6 | 5.3 | 9.1 | 8.0 | 7.7 | 6.2 | 7.5 | 7.2 | 7.0 | 6.6 | 5.4 | 4.9 | 5.4 | 5.4 | 4.5 | 3.9 | 4. |
| 5.5 | 4.2 | 3.4 | 2.9 | 2.9 | 2.1 | 6.0 | 5.7 | 9.6 | 8.6 | 7.1 | 7.2 | 8.0 | 7.3 | 6.7 | 6.6 | 6.0 | 5.0 | 4.7 | 4.0 | 4.0 | 3.5 | 6. |
| 6.4 | 6.0 | 5.2 | 3.8 | 3.6 | 3.2 | 6.0 | 5.9 | 8.7 | 8.6 | 8.0 | 6.8 | 7.1 | 7.5 | 7.8 | 6.5 | 5.6 | 4.3 | 4.7 | 4.4 | 4.6 | 3.6 | 7. |
| 6.0 | 4.8 | 3.5 | 2.8 | 2.1 | 2.0 | 5.7 | 5.6 | 7.4 | 7.1 | 15.6 | 7.0 | 9.2 | 8.5 | 6.9 | 6.3 | 4.8 | 4.5 | 3.7 | 3.1 | 2.3 | 2.2 | 6 |
| 6.1 | 5.1 | 4.1 | 3.2 | 2.8 | 2.3 | 5.9 | 5.7 | 8.3 | 8.0 | 11.6 | 7.1 | 8.4 | 7.9 | 6.9 | 6.3 | 5.3 | 4.7 | 4.2 | 3.6 | 3.2 | 2.8 | 6 |
| 6.2 | 6.0 | 4.6 | 4.3 | 3.8 | 3.9 | 5.6 | 5.4 | 7.6 | 7.3 | 8.1 | 7.6 | 8.4 | 8.4 | 6.8 | 6.9 | 5.4 | 5.5 | 4.3 | 4.3 | 3.9 | 4.5 | 6 |
| 6.8 | 5.1 | 4.4 | 2.9 | 2.9 | 2.1 | 5.7 | 5.5 | 8.3 | 8.0 | 7.6 | 7.4 | 7.9 | 7.9 | 6.8 | 6.8 | 5.4 | 5.3 | 4.4 | 4.3 | 4.2 | 4.5 | 6 |
| 6.3 | 6.0 | 4.5 | 4.2 | 4.0 | 3.9 | 5.4 | 5.2 | 8.1 | 7.7 | 7.4 | 7.4 | 7.2 | 7.1 | 6.6 | 6.6 | 5.8 | 5.8 | 5.0 | 5.2 | 4.8 | 5.0 | 5 |
| 6.1 | 5.6 | 4.4 | 4.1 | 2.3 | 3.7 | 6.0 | 6.1 | 8.9 | 8.4 | 8.9 | 7.1 | 8.3 | 7.8 | 7.3 | 6.5 | 5.7 | 4.8 | 4.6 | 13.8 | 3.5 | 2.8 | 6 |
| 12.1 | 11.5 | 8.2 | 7.9 | 6.7 | 7.0 | 11.0 | 10.5 | 16.6 | 15.8 | 14.6 | 14.8 | 15.5 | 16.1 | 14.2 | 14.3 | 11.5 | 11.5 | 8.9 | 8.7 | 7.7 | 8.5 | 11 |

stics, 1960 (Table 26), 1950 (Table 41), 1940 (Table 22).

TABLE a-10

ATTE RIVER BASIN, SUBREGIONS, COUNTIES, AND RELATED REGIONS
NTAGE, 1940, 1950, 1960

| 1950 | | | | | | | | | | | 1960 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -24 | 25-34 | | 35-44 | | 45-54 | | 55-64 | | 65 & over | | Under 5 | | 5-14 | | 15-24 | | 25-34 | | 35-44 | |
| F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F |
| 6.9 | 10.4 | 9.6 | 7.2 | 6.2 | 4.7 | 3.9 | 3.3 | 2.4 | 2.5 | 2.1 | 8.6 | 8.3 | 12.7 | 12.1 | 5.5 | 6.6 | 9.2 | 9.4 | 7.3 | 6.6 |
| 7.3 | 9.7 | 9.9 | 7.0 | 6.4 | 5.0 | 4.4 | 3.4 | 3.3 | 3.0 | 3.2 | 7.0 | 6.8 | 11.7 | 11.4 | 7.1 | 6.0 | 7.4 | 7.9 | 8.1 | 7.9 |
| 10.4 | 7.9 | 6.9 | 5.5 | 5.9 | 4.7 | 5.2 | 4.1 | 4.5 | 4.6 | 5.4 | 5.6 | 5.4 | 9.1 | 8.7 | 10.3 | 9.6 | 7.2 | 6.7 | 5.7 | 5.9 |
| 7.4 | 8.5 | 8.9 | 6.9 | 7.5 | 5.7 | 6.2 | 4.6 | 5.0 | 4.1 | 5.3 | 5.5 | 5.3 | 9.0 | 8.9 | 6.3 | 6.9 | 6.4 | 6.7 | 6.4 | 6.9 |
| 6.4 | 8.3 | 8.8 | 7.8 | 7.7 | 5.6 | 5.2 | 3.8 | 3.4 | 3.1 | 3.2 | 6.3 | 5.9 | 11.3 | 10.9 | 6.3 | 6.2 | 6.7 | 7.3 | 8.0 | 8.1 |
| 7.5 | 8.6 | 8.8 | 6.9 | 7.2 | 5.5 | 5.7 | 4.3 | 4.5 | 3.8 | 4.8 | 6.2 | 6.0 | 10.2 | 9.9 | 6.6 | 6.9 | 7.0 | 7.3 | 7.3 | 7.0 |
| 8.0 | 7.6 | 7.1 | 6.0 | 6.0 | 5.0 | 5.4 | 4.4 | 4.8 | 5.1 | 5.3 | 5.1 | 5.0 | 9.1 | 8.5 | 10.2 | 8.6 | 5.7 | 5.5 | 5.3 | 5.6 |
| 7.7 | 7.6 | 7.1 | 6.1 | 5.9 | 4.8 | 4.8 | 4.4 | 4.4 | 4.5 | 4.0 | 6.2 | 6.0 | 11.2 | 11.5 | 6.8 | 6.8 | 6.1 | 6.3 | 6.4 | 6.2 |
| 7.9 | 6.9 | 6.7 | 6.6 | 6.3 | 5.2 | 4.8 | 4.0 | 3.7 | 4.6 | 4.1 | 6.4 | 6.2 | 11.2 | 11.4 | 6.2 | 6.6 | 6.0 | 6.3 | 6.0 | 5.8 |
| 8.6 | 7.2 | 7.0 | 6.3 | 6.2 | 4.8 | 4.6 | 4.1 | 3.8 | 4.2 | 3.9 | 5.8 | 5.6 | 10.7 | 10.3 | 7.7 | 8.5 | 5.8 | 5.9 | 5.8 | 5.8 |
| 8.2 | 7.4 | 7.0 | 6.2 | 6.1 | 4.9 | 4.9 | 4.2 | 4.1 | 4.5 | 4.3 | 5.7 | 5.6 | 10.3 | 10.0 | 8.2 | 8.1 | 5.8 | 5.9 | 5.8 | 5.8 |
| 5.8 | 7.1 | 7.2 | 8.1 | 7.9 | 6.8 | 5.3 | 4.9 | 4.5 | 4.5 | 5.3 | 3.8 | 4.6 | 9.0 | 9.0 | 5.9 | 5.3 | 5.1 | 5.7 | 6.8 | 7.3 |
| 5.8 | 4.9 | 5.0 | 7.5 | 7.0 | 9.6 | 5.8 | 7.4 | 6.2 | 7.2 | 6.0 | 5.1 | 4.2 | 7.3 | 6.9 | 5.0 | 3.5 | 5.1 | 5.1 | 5.4 | 6.9 |
| 5.6 | 7.1 | 7.0 | 8.6 | 7.9 | 8.3 | 5.4 | 5.4 | 4.2 | 6.0 | 3.4 | 4.3 | 5.1 | 9.2 | 9.5 | 5.3 | 5.2 | 7.4 | 6.8 | 6.6 | 5.4 |
| 5.7 | 6.8 | 6.8 | 8.2 | 7.8 | 7.6 | 5.4 | 5.4 | 4.6 | 5.3 | 4.8 | 4.2 | 4.7 | 8.8 | 8.9 | 5.5 | 5.0 | 5.9 | 6.0 | 6.5 | 6.6 |
| 6.7 | 6.8 | 6.7 | 7.6 | 6.8 | 7.1 | 6.5 | 5.6 | 4.1 | 4.9 | 4.2 | 5.8 | 4.6 | 10.9 | 11.1 | 5.6 | 5.7 | 5.4 | 6.3 | 7.0 | 6.6 |
| 6.4 | 6.5 | 6.1 | 7.6 | 6.7 | 6.1 | 5.2 | 5.1 | 3.6 | 4.5 | 3.6 | 5.1 | 4.3 | 10.4 | 9.3 | 6.1 | 6.1 | 5.4 | 4.9 | 6.0 | 5.8 |
| 7.3 | 7.4 | 7.0 | 6.6 | 6.2 | 5.5 | 4.7 | 4.2 | 3.9 | 4.1 | 3.5 | 5.6 | 5.1 | 11.3 | 10.4 | 5.9 | 6.2 | 5.0 | 5.2 | 6.5 | 6.5 |
| 7.4 | 7.9 | 7.3 | 6.8 | 5.4 | 5.0 | 4.5 | 4.6 | 3.8 | 4.4 | 3.4 | 5.4 | 5.7 | 11.0 | 11.3 | 6.2 | 5.7 | 5.7 | 5.7 | 6.6 | 6.4 |
| 7.9 | 8.5 | 7.7 | 6.3 | 5.9 | 5.8 | 4.9 | 4.9 | 4.2 | 3.5 | 2.7 | 6.5 | 6.4 | 12.0 | 11.8 | 5.3 | 6.0 | 6.4 | 7.0 | 6.7 | 6.2 |
| 6.2 | 7.5 | 7.2 | 7.0 | 6.6 | 5.4 | 4.9 | 5.4 | 5.4 | 4.5 | 3.9 | 4.8 | 5.3 | 9.8 | 10.3 | 6.0 | 5.5 | 4.5 | 4.7 | 5.9 | 6.2 |
| 7.2 | 8.0 | 7.3 | 6.7 | 6.6 | 6.0 | 5.0 | 4.7 | 4.0 | 4.0 | 3.5 | 6.2 | 6.0 | 10.7 | 9.9 | 5.7 | 6.8 | 6.1 | 6.3 | 5.9 | 6.1 |
| 6.8 | 7.1 | 7.5 | 7.8 | 6.5 | 5.6 | 4.3 | 4.7 | 4.4 | 4.6 | 3.6 | 7.8 | 7.7 | 11.0 | 12.2 | 5.8 | 6.9 | 8.8 | 7.9 | 6.4 | 5.9 |
| 7.0 | 9.2 | 8.5 | 6.9 | 6.3 | 4.8 | 4.5 | 3.7 | 3.1 | 2.3 | 2.2 | 6.5 | 6.6 | 10.4 | 9.9 | 7.3 | 6.8 | 7.9 | 7.0 | 7.2 | 6.9 |
| 7.1 | 8.4 | 7.9 | 6.9 | 6.3 | 5.3 | 4.7 | 4.2 | 3.6 | 3.2 | 2.8 | 6.4 | 6.3 | 10.8 | 10.4 | 6.5 | 6.5 | 7.1 | 6.7 | 6.8 | 6.6 |
| 7.6 | 8.4 | 8.4 | 6.8 | 6.9 | 5.4 | 5.5 | 4.3 | 4.3 | 3.9 | 4.5 | 6.1 | 5.9 | 10.2 | 10.0 | 6.8 | 7.0 | 6.8 | 7.0 | 7.1 | 6.8 |
| 7.4 | 7.9 | 7.9 | 6.8 | 6.8 | 5.4 | 5.3 | 4.4 | 4.3 | 4.2 | 4.5 | 6.1 | 5.8 | 10.4 | 10.1 | 7.0 | 6.9 | 6.5 | 6.7 | 6.6 | 6.7 |
| 7.4 | 7.2 | 7.1 | 6.6 | 6.6 | 5.8 | 5.8 | 5.0 | 5.2 | 4.8 | 5.0 | 5.8 | 5.6 | 9.9 | 9.6 | 6.4 | 6.6 | 6.0 | 6.0 | 6.0 | 6.1 |
| 7.1 | 8.3 | 7.8 | 7.3 | 6.5 | 5.7 | 4.8 | 4.6 | 13.8 | 3.5 | 2.8 | 6.2 | 6.0 | 11.0 | 10.5 | 6.7 | 6.7 | 6.7 | 6.5 | 6.7 | 6.4 |
| 14.8 | 15.5 | 16.1 | 14.2 | 14.3 | 11.5 | 11.5 | 8.9 | 8.7 | 7.7 | 8.5 | 11.7 | 11.0 | 20.5 | 19.2 | 13.5 | 13.3 | 12.6 | 12.8 | 13.3 | 13.5 |

ble 22).

ES, AND RELATED REGIONS

|  |  |  |  | 1960 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 55-64 |  | 65 & over |  | Under 5 |  | 5-14 |  | 15-24 |  | 25-34 |  | 35-44 |  | 45-54 |  | 55-64 |  | 65 & over |  |
| M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F |
| .3 | 2.4 | 2.5 | 2.1 | 8.6 | 8.3 | 12.7 | 12.1 | 5.5 | 6.6 | 9.2 | 9.4 | 7.3 | 6.6 | 3.7 | 3.3 | 1.8 | 1.7 | 1.5 | 1.6 |
| .4 | 3.3 | 3.0 | 3.2 | 7.0 | 6.8 | 11.7 | 11.4 | 7.1 | 6.0 | 7.4 | 7.9 | 8.1 | 7.9 | 4.7 | 4.3 | 2.5 | 2.4 | 2.1 | 2.8 |
| .1 | 4.5 | 4.6 | 5.4 | 5.6 | 5.4 | 9.1 | 8.7 | 10.3 | 9.6 | 7.2 | 6.7 | 5.7 | 5.9 | 4.6 | 4.8 | 3.2 | 3.8 | 4.0 | 5.3 |
| .6 | 5.0 | 4.1 | 5.3 | 5.5 | 5.3 | 9.0 | 8.9 | 6.3 | 6.9 | 6.4 | 6.7 | 6.4 | 6.9 | 5.5 | 6.0 | 4.3 | 5.0 | 4.5 | 6.2 |
| .8 | 3.4 | 3.1 | 3.2 | 6.3 | 5.9 | 11.3 | 10.9 | 6.3 | 6.2 | 6.7 | 7.3 | 8.0 | 8.1 | 5.7 | 5.4 | 3.2 | 3.1 | 2.5 | 3.0 |
| .3 | 4.5 | 3.8 | 4.8 | 6.2 | 6.0 | 10.2 | 9.9 | 6.6 | 6.9 | 7.0 | 7.3 | 7.3 | 7.0 | 5.1 | 5.3 | 3.5 | 3.9 | 3.5 | 4.7 |
| .4 | 4.8 | 5.1 | 5.3 | 5.1 | 5.0 | 9.1 | 8.5 | 10.2 | 8.6 | 5.7 | 5.5 | 5.3 | 5.6 | 5.0 | 5.4 | 4.0 | 4.6 | 6.5 | 6.5 |
| .4 | 4.4 | 4.5 | 4.0 | 6.2 | 6.0 | 11.2 | 11.5 | 6.8 | 6.8 | 6.1 | 6.3 | 6.4 | 6.2 | 5.0 | 4.9 | 3.8 | 3.7 | 4.4 | 4.8 |
| .0 | 3.7 | 4.6 | 4.1 | 6.4 | 6.2 | 11.2 | 11.4 | 6.2 | 6.6 | 6.0 | 6.3 | 6.0 | 5.8 | 5.5 | 5.2 | 3.7 | 3.6 | 4.7 | 4.8 |
| .1 | 3.8 | 4.2 | 3.9 | 5.8 | 5.6 | 10.7 | 10.3 | 7.7 | 8.5 | 5.8 | 5.9 | 5.8 | 5.8 | 5.2 | 5.3 | 3.8 | 3.8 | 4.7 | 5.0 |
| .2 | 4.1 | 4.5 | 4.3 | 5.7 | 5.6 | 10.3 | 10.0 | 8.2 | 8.1 | 5.8 | 5.9 | 5.8 | 5.8 | 5.2 | 5.2 | 3.8 | 4.0 | 5.0 | 5.4 |
| .9 | 4.5 | 4.5 | 5.3 | 3.8 | 4.6 | 9.0 | 9.0 | 5.9 | 5.3 | 5.1 | 5.7 | 6.8 | 7.3 | 6.8 | 7.0 | 6.0 | 5.1 | 6.3 | 6.3 |
| .4 | 6.2 | 7.2 | 6.0 | 5.1 | 4.2 | 7.3 | 6.9 | 5.0 | 3.5 | 5.1 | 5.1 | 5.4 | 6.9 | 7.3 | 7.4 | 8.8 | 7.4 | 7.9 | 6.7 |
| .4 | 4.2 | 6.0 | 3.4 | 4.3 | 5.1 | 9.2 | 9.5 | 5.3 | 5.2 | 7.4 | 6.8 | 6.6 | 5.4 | 7.7 | 6.6 | 6.9 | 4.9 | 5.4 | 3.6 |
| .4 | 4.6 | 5.3 | 4.8 | 4.2 | 4.7 | 8.8 | 8.9 | 5.5 | 5.0 | 5.9 | 6.0 | 6.5 | 6.6 | 7.2 | 6.9 | 6.7 | 5.3 | 6.2 | 5.4 |
| .6 | 4.1 | 4.9 | 4.2 | 5.8 | 4.6 | 10.9 | 11.1 | 5.6 | 5.7 | 5.4 | 6.3 | 7.0 | 6.6 | 6.2 | 5.7 | 4.8 | 4.3 | 4.8 | 5.2 |
| .1 | 3.6 | 4.5 | 3.6 | 5.1 | 4.3 | 10.4 | 9.3 | 6.1 | 6.1 | 5.4 | 4.9 | 6.0 | 5.8 | 6.5 | 6.5 | 5.7 | 5.0 | 6.5 | 6.1 |
| .2 | 3.9 | 4.1 | 3.5 | 5.6 | 5.1 | 11.3 | 10.4 | 5.9 | 6.2 | 5.0 | 5.2 | 6.5 | 6.5 | 6.2 | 5.8 | 4.6 | 4.2 | 5.5 | 5.8 |
| .6 | 3.8 | 4.4 | 3.4 | 5.4 | 5.7 | 11.0 | 11.3 | 6.2 | 5.7 | 5.7 | 5.7 | 6.6 | 6.4 | 5.8 | 4.8 | 4.4 | 4.2 | 5.9 | 5.2 |
| .9 | 4.2 | 3.5 | 2.7 | 6.5 | 6.4 | 12.0 | 11.8 | 5.3 | 6.0 | 6.4 | 7.0 | 6.7 | 6.2 | 4.9 | 5.0 | 4.1 | 3.8 | 3.9 | 4.0 |
| .4 | 5.4 | 4.5 | 3.9 | 4.8 | 5.3 | 9.8 | 10.3 | 6.0 | 5.5 | 4.5 | 4.7 | 5.9 | 6.2 | 6.5 | 5.9 | 4.7 | 4.6 | 7.3 | 8.0 |
| .7 | 4.0 | 4.0 | 3.5 | 6.2 | 6.0 | 10.7 | 9.9 | 5.7 | 6.8 | 6.1 | 6.3 | 5.9 | 6.1 | 5.6 | 5.4 | 5.0 | 4.5 | 5.0 | 4.8 |
| .7 | 4.4 | 4.6 | 3.6 | 7.8 | 7.7 | 11.0 | 12.2 | 5.8 | 6.9 | 8.8 | 7.9 | 6.4 | 5.9 | 4.5 | 4.2 | 2.9 | 2.4 | 2.8 | 2.7 |
| .7 | 3.1 | 2.3 | 2.2 | 6.5 | 6.6 | 10.4 | 9.9 | 7.3 | 6.8 | 7.9 | 7.0 | 7.2 | 6.9 | 5.5 | 5.0 | 3.8 | 3.3 | 2.8 | 3.1 |
| .2 | 3.6 | 3.2 | 2.8 | 6.4 | 6.3 | 10.8 | 10.4 | 6.5 | 6.5 | 7.1 | 6.7 | 6.8 | 6.6 | 5.5 | 5.1 | 4.1 | 3.6 | 3.7 | 3.8 |
| .3 | 4.3 | 3.9 | 4.5 | 6.1 | 5.9 | 10.2 | 10.0 | 6.8 | 7.0 | 6.8 | 7.0 | 7.1 | 6.8 | 5.2 | 5.2 | 3.6 | 3.9 | 3.8 | 4.7 |
| .4 | 4.3 | 4.2 | 4.5 | 6.1 | 5.8 | 10.4 | 10.1 | 7.0 | 6.9 | 6.5 | 6.7 | 6.6 | 6.7 | 5.3 | 5.3 | 3.7 | 4.0 | 4.1 | 4.9 |
| .0 | 5.2 | 4.8 | 5.0 | 5.8 | 5.6 | 9.9 | 9.6 | 6.4 | 6.6 | 6.0 | 6.0 | 6.0 | 6.1 | 5.4 | 5.6 | 4.6 | 4.8 | 5.4 | 6.2 |
| .6 | 13.8 | 3.5 | 2.8 | 6.2 | 6.0 | 11.0 | 10.5 | 6.7 | 6.7 | 6.7 | 6.5 | 6.7 | 6.4 | 5.7 | 5.2 | 4.1 | 3.6 | 4.1 | 3.8 |
| .9 | 8.7 | 7.7 | 8.5 | 11.7 | 11.0 | 20.5 | 19.2 | 13.5 | 13.3 | 12.6 | 12.8 | 13.3 | 13.5 | 11.5 | 11.5 | 8.6 | 8.8 | 8.5 | 10.0 |

## TABLE a-11

### MEDIAN AGE AND PERCENTAGE OF POPULATION IN MAJOR AGE GROUPS FOR THE SOUTH PLATTE RIVER BASIN COUNTIES, SUBREGIONS, AND RELATED REGIONS, 1940, 1950, 1960

| Area | 1940 | | | 1950 | | | | 1960 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0-5 | 21 yrs. and over | 65 yrs. and over | 0-5 | 21 yrs. and over | 65 yrs. and over | Median Age | 0-5 | 21 yrs. and over | 65 yrs. and over | Median Age |
| Metropolitan | | | | | | | | | | | |
| Adams | 9 | 61 | 6 | 14 | 59 | 5 | 26.2 | 17 | 52 | 3 | 21.9 |
| Arapahoe | 9 | 62 | 7 | 15 | 61 | 6 | 27.6 | 14 | 55 | 5 | 25.0 |
| Boulder | 8 | 65 | 9 | 9 | 65 | 10 | 27.8 | 11 | 59 | 9 | 25.9 |
| Denver | 7 | 70 | 9 | 10 | 69 | 9 | 32.1 | 11 | 63 | 11 | 31.2 |
| Jefferson | 8 | 65 | 7 | 12 | 63 | 6 | 29.2 | 12 | 58 | 6 | 27.5 |
| | 7 | 68 | 8 | 11 | 67 | 9 | 28.6 | 13 | 57 | 7 | 26.3 |
| Irrigated Plains | | | | | | | | | | | |
| Larimer | 8 | 63 | 9 | 10 | 64 | 10 | 29.1 | 10 | 60 | 12 | 27.9 |
| Logan | 10 | 57 | 6 | 12 | 59 | 8 | 27.3 | 12 | 56 | 9 | 26.3 |
| Morgan | 10 | 58 | 7 | 12 | 58 | 9 | 27.1 | 13 | 56 | 10 | 26.5 |
| Weld | 10 | 58 | 6 | 12 | 58 | 8 | 26.4 | 11 | 57 | 10 | 26.1 |
| | 10 | 59 | 7 | 11 | 60 | 9 | 27.5 | 12 | 57 | 10 | 26.7 |
| Mountain | | | | | | | | | | | |
| Clear Creek | 10 | 68 | 8 | 10 | 66 | 10 | 33.3 | 8 | 66 | 13 | 36.1 |
| Gilpin | 9 | 68 | 8 | 7 | 70 | 13 | 40.2 | 9 | 70 | 15 | 41.9 |
| Park | 9 | 67 | 5 | 10 | 69 | 9 | 34.4 | 9 | 65 | 9 | 33.1 |
| | 9 | 67 | 7 | 9 | 68 | 10 | 36.0 | 9 | 67 | 12 | 37.0 |
| Dry Plains | | | | | | | | | | | |
| Douglas | 9 | 65 | 7 | 10 | 65 | 9 | 32.8 | 10 | 60 | 10 | 31.1 |
| Elbert | 10 | 61 | 7 | 10 | 60 | 8 | 29.2 | 9 | 62 | 13 | 34.3 |
| Sedgwick | 10 | 58 | 6 | 12 | 59 | 8 | 27.2 | 11 | 59 | 11 | 30.4 |
| Washington | 10 | 58 | 6 | 12 | 59 | 8 | 26.9 | 11 | 58 | 11 | 30.0 |
| Cheyenne | 9 | 59 | 5 | 13 | 61 | 6 | 27.5 | 13 | 56 | 8 | 26.6 |
| Deuel | 9 | 61 | 5 | 11 | 63 | 8 | 30.0 | 10 | 62 | 15 | 34.1 |
| Keith | 10 | 60 | 5 | 12 | 62 | 7 | 28.6 | 12 | 59 | 10 | 28.8 |
| Kimball | 8 | 62 | 7 | 12 | 62 | 8 | 29.4 | 16 | 54 | 6 | 24.0 |
| Laramie | 7 | 65 | 4 | 11 | 60 | 5 | 25.9 | 13 | 58 | 6 | 26.7 |
| | 9 | 59 | 5 | 11 | 61 | 6 | 28.6 | 12 | 59 | 10 | 29.5 |
| Colorado | 11 | 68 | 8 | 11 | 64 | 9 | 29.5 | 12 | 59 | 9 | 27.9 |
| Nebraska | 8 | 65 | 8 | 10 | 66 | 10 | 31.0 | 11 | 61 | 12 | 30.2 |
| Wyoming | 9 | 62 | 5 | 12 | 63 | 6 | 27.9 | 12 | 58 | 8 | 27.3 |
| United States | 16 | 64 | 7 | 11 | 66 | 8 | 30.2 | 11 | 60 | 9 | 29.5 |

Source: City and County Data Book, 1962, Table 2

The portion of non-whites in the South Platte River Basin is smaller than that of surrounding states and less than a fifth that of the United States (Table a-12). The largest percentage is found in the metropolitan subregion and specifically Denver County, where the share of non-whites has grown from 2.3% in 1940 to 7.1% in 1960. This is a local illustration of the nationwide movement of negroes to the big cities. The metropolitan counties surrounding Denver have extremely small percentages of non-whites reflecting perhaps the restrictive nature of the suburbs and the tendency for minority groups to cluster close together in the core city.

Now for a look at the three components of population change in the South Platte River Basin, birth rates, death rates, and migration. Birth rates for the basin (Table a-13) do not vary greatly from those of the state and the United States and follow the same trend, generally increasing through the forties reaching a peak in the fifties and declining since 1960. Birth rates are highest in the suburban metropolitan counties and lowest in the non-urban plains and mountain counties as might be expected from the age distribution described above. Death rates (Table a-14) are lower and have shown a declining trend in the urbanized counties where people are younger. They remain higher and in some cases

## TABLE a-12

## PERCENTAGE OF THE POPULATION THAT IS NON-WHITE FOR COUNTIES AND RELATED REGIONS, 1940, 1950, 1960

| Area | 1940 | 1950 | 1960 |
|---|---|---|---|
| Metropolitan | | | |
| Adams | 2.2 | 3.1 | 1.7 |
| Arapahoe | 0.9 | 0.8 | 0.7 |
| Boulder | 0.7 | 1.2 | 0.8 |
| Denver | 2.3 | 4.4 | 7.1 |
| Jefferson | 0.4 | 0.4 | 0.4 |
| | | | 2.1 |
| Irrigated Plains | | | |
| Larimer | 0.1 | 0.2 | 0.6 |
| Logan | 0.5 | 0.3 | 0.3 |
| Morgan | 0.2 | 0.4 | 0.3 |
| Weld | 1.2 | 1.3 | 1.2 |
| | | | 0.6 |
| Mountain | | | |
| Clear Creek | 0.2 | 0.2 | 0.1 |
| Gilpin | 0.0 | 0.4 | 0.3 |
| Park | 0.0 | - | 0.1 |
| | | | 0.2 |
| Dry Plains | | | |
| Douglas | 0.4 | 0.4 | 0.2 |
| Elbert | 0.2 | - | 0.4 |
| Sedgwick | 1.5 | 2.0 | 2.4 |
| Washington | 0.3 | 0.1 | 0.1 |
| Cheyenne | 0.2 | 0.7 | 0.7 |
| Deuel | 0.0 | - | - |
| Keith | 0.0 | 0.1 | 0.1 |
| Kimball | 0.0 | 0.3 | 0.4 |
| Laramie | 1.3 | 3.4 | 2.4 |
| | | | 0.7 |
| Colorado | 1.5 | 2.2 | 3.0 |
| Nebraska | 1.4 | 1.8 | 2.6 |
| Wyoming | 1.7 | 2.2 | 2.2 |
| Mountain Region | n.a. | 4.6 | 5.4 |
| West No. Cent. Reg. | n.a. | 2.9 | 3.5 |
| United States | 10.2 | 10.3 | 11.4 |

n.a. Data not available

Source: City and County Data Book, 1962, Table 2, 1956 Table 2, 1940

### TABLE a-13

### BIRTH RATES FOR COUNTIES OF THE SOUTH PLATTE RIVER BASIN AND RELATED REGIONS, 1940-1964
### (NUMBER OF LIVE BIRTHS PER 1,000 POPULATION)

| Area | 1940 | 1950 | 1960 | 1961 | 1962 | 1963 | 1964 |
|---|---|---|---|---|---|---|---|
| Metropolitan | | | | | | | |
| Adams | 17.2 | 30.2 | 31.1 | 31.5 | 28.0 | 27.6 | 25.3 |
| Arapahoe | 19.6 | 30.9 | 25.7 | 25.9 | 23.1 | 22.8 | 20.5 |
| Boulder | 18.1 | 22.3 | 25.2 | 25.2 | 23.7 | 23.2 | 22.6 |
| Denver | 16.9 | 25.2 | 24.2 | 24.7 | 22.9 | 20.9 | 19.5 |
| Jefferson | 16.9 | 26.3 | 25.8 | 26.2 | 26.5 | 24.6 | 23.2 |
| Irrigated Plains | | | | | | | |
| Larimer | 19.3 | 23.4 | 24.0 | 23.3 | 21.5 | 21.3 | 19.9 |
| Logan | 22.5 | 28.6 | 23.8 | 24.9 | 21.5 | 21.5 | 18.8 |
| Morgan | 24.5 | 27.0 | 27.4 | 25.4 | 24.6 | 21.6 | 20.3 |
| Weld | 21.4 | 26.2 | 24.1 | 25.3 | 23.4 | 22.8 | 22.3 |
| Mountain | | | | | | | |
| Clear Creek | 21.9 | 19.1 | 21.5 | 22.5 | 20.0 | 23.2 | 23.1 |
| Gilpin | 21.5 | 14.1 | 7.3 | 20.7 | 29.0 | 13.8 | 16.8 |
| Park | 24.4 | 17.6 | 22.5 | 25.7 | 15.2 | 14.4 | 19.4 |
| Dry Plains | | | | | | | |
| Douglas | 15.1 | 24.2 | 20.6 | 18.9 | 18.3 | 16.1 | 19.5 |
| Elbert | 18.6 | 15.8 | 21.0 | 22.2 | 18.6 | 14.3 | 13.7 |
| Sedgwick | 21.7 | 23.7 | 22.2 | 19.3 | 16.6 | 17.6 | 13.2 |
| Washington | 18.9 | 22.3 | 20.2 | 17.8 | 18.2 | 16.8 | 12.7 |
| Cheyenne | 21.4 | 31.2 | 16.7 | 22.8 | 20.8 | 17.0 | 18.9 |
| Deuel | 24.4 | 23.7 | 16.6 | 17.4 | 23.2 | 13.0 | 14.7 |
| Keith | 20.1 | 25.3 | 26.0 | 27.2 | 27.0 | 24.6 | 20.9 |
| Kimball | 24.2 | 28.4 | 33.6 | 25.7 | 22.7 | 27.6 | 26.0 |
| Laramie | 19.1 | 23.6 | 28.8 | 29.8 | 26.7 | 25.4 | n.a. |
| Colorado | 19.0 | 25.5 | 24.5 | 24.8 | 23.2 | 21.9 | 20.6 |
| Nebraska | 17.3 | 24.1 | 24.3 | 24.1 | 22.9 | 22.3 | n.a. |
| Wyoming | 20.2 | 25.8 | 25.3 | 24.9 | 23.7 | 22.1 | n.a. |
| Mountain Region | 24.0 | 28.8 | 27.3 | 26.7 | 24.9 | 23.7 | n.a. |
| West No. Cent. Reg. | 18.4 | 24.0 | 24.0 | 23.5 | 22.7 | 21.5 | n.a. |
| United States | 19.4 | 24.1 | 23.7 | 23.3 | 22.4 | 21.6 | 21.2 |

n.a. Data not available

Source: Colorado State Department of Public Health, Colorado Vital Statistics, 1940-1964, Nebraska Bureau of Vital Statistics, personal correspondence, Wyoming Department of Public Health, Vital Statics. 1963. Statistical Abstract of the United States, 1963, Table 51.

## TABLE a-14

### DEATH RATES FOR COUNTIES OF THE SOUTH PLATTE RIVER BASIN AND RELATED REGIONS, 1940-1964
### (NUMBER OF DEATHS PER 1,000 POPULATION)

| Area | | 1950 | 1960 | 1961 | 1962 | 1963 | 1964 |
|---|---|---|---|---|---|---|---|
| Metropolitan | | | | | | | |
| Adams | 9.3 | 5.3 | 4.7 | 4.3 | 3.8 | 4.4 | 4.4 |
| Arapahoe | 8.8 | 7.1 | 5.6 | 5.1 | 5.2 | 5.4 | 5.1 |
| Boulder | 11.7 | 9.2 | 8.0 | 7.4 | 7.5 | 7.1 | 7.4 |
| Denver | 11.9 | 10.1 | 10.6 | 10.3 | 10.9 | 10.4 | 10.1 |
| Jefferson | 10.0 | 7.8 | 6.0 | 5.5 | 5.3 | 5.5 | 6.3 |
| Irrigated Plains | | | | | | | |
| Larimer | 9.3 | 8.0 | 10.6 | 10.2 | 9.2 | 8.4 | 9.7 |
| Logan | 6.9 | 7.7 | 8.3 | 7.3 | 9.4 | 8.8 | 8.7 |
| Morgan | 8.7 | 8.6 | 8.2 | 8.6 | 8.0 | 8.9 | 9.1 |
| Weld | 9.0 | 7.4 | 8.6 | 8.3 | 8.7 | 8.6 | 8.2 |
| Mountain | | | | | | | |
| Clear Creek | 15.0 | 10.0 | 16.8 | 13.2 | 15.4 | 13.0 | 10.7 |
| Gilpin | 12.9 | 10.5 | 13.1 | 13.8 | 17.9 | 17.9 | 9.0 |
| Park | 8.2 | 9.0 | 5.5 | 13.7 | 10.3 | 11.1 | 10.3 |
| Dry Plains | | | | | | | |
| Douglas | 8.0 | 10.8 | 6.9 | 10.0 | 9.4 | 10.1 | 9.1 |
| Elbert | 6.7 | 5.5 | 9.7 | 7.5 | 9.9 | 8.8 | 9.3 |
| Sedgwick | 7.7 | 9.6 | 14.1 | 9.3 | 8.2 | 11.2 | 7.5 |
| Washington | 6.7 | 8.1 | 6.5 | 8.2 | 8.5 | 9.7 | 9.3 |
| Cheyenne | 7.8 | 6.0 | 5.9 | 6.5 | 5.6 | 6.7 | 7.4 |
| Deuel | 8.1 | 7.8 | 10.8 | 7.1 | 11.3 | 14.0 | 11.0 |
| Keith | 6.8 | 8.1 | 8.7 | 8.2 | 7.6 | 7.1 | 8.0 |
| Kimball | 7.1 | 6.5 | 5.5 | 5.4 | 4.4 | 5.5 | 6.6 |
| Laramie | 6.5 | 6.8 | 7.0 | 6.6 | 6.9 | 6.7 | n.a. |
| Colorado | 10.8 | 9.2 | 8.8 | 8.4 | 8.5 | 8.4 | 8.3 |
| Nebraska | 9.6 | 9.5 | 10.0 | 9.7 | 9.6 | 9.8 | n.a. |
| Wyoming | 8.5 | 7.9 | 8.5 | 7.8 | 8.2 | 8.5 | n.a. |
| Mountain Region | 10.2 | 8.6 | 8.1 | 7.8 | 7.7 | 7.9 | n.a. |
| West No. Cent. Reg. | 10.3 | 10.1 | 10.1 | 9.8 | 10.1 | 10.3 | n.a. |
| United States | 10.8 | 9.6 | 9.5 | 9.3 | 9.5 | 9.6 | 9.4 |

n.a. Data not available

Source: Same as Table a-13

have followed a rising trend in the plains and mountain counties where the population is aging.

Migration has been the most important factor in the population change of all counties in the basin except the more stable irrigated plains counties. The percentage of the people living in each of these counties who were migrants from another county at the time of the 1960 census is seen in Table a-15. This proportion is higher than for the state of Colorado in all the metropolitan counties[2] except Denver, in all of the mountain counties, and in none of the plains counties except Larimer, Douglas, Kimball and Laramie where there are large urban populations. And the share of migrant to total population is nearly twice as great in Colorado as in the United States as a whole. The proportion of foreign born residents is smaller in this region than in the United States while the proportion of native born of mixed parentage is not significantly different.

The estimates of migration in Table a-16 were developed by calculating the difference between the natural increase (birth minus deaths) and the total population change in each ounty for each decade.

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[2] This is consistent with the younger age of the metropolitan counties and the apparent fact that migration is a behavior typical of younger people.

## TABLE a-15

## SHARE OF POPULATION THAT ARE MIGRANTS OR FOREIGN BORN FOR THE SOUTH PLATTE RIVER BASIN COUNTIES AND RELATED REGIONS, 1960

| Area | Migrants from Different County (Percentage) | Net Gain or Loss Through Civ. Migr. 1950-60 | Foreign Born | Native of Foreign or mixed (Percentage) |
|---|---|---|---|---|
| Metropolitan | | | | |
| Adams | 55.9 | 62,645 | 2.5 | 10.0 |
| Arapahoe | 50.2 | 42,894 | 2.2 | 9.3 |
| Boulder | 42.2 | 18,245 | 3.2 | 11.6 |
| Denver | 23.0 | 10,296 | 4.8 | 13.9 |
| Jefferson | 48.5 | 56,128 | 2.3 | 10.9 |
| Irrigated Plains | | | | |
| Larimer | 34.8 | 3,108 | 3.6 | 11.4 |
| Logan | 19.9 | -961 | 3.8 | 14.4 |
| Morgan | 22.9 | -1,087 | 4.2 | 15.3 |
| Weld | 22.8 | -6,244 | 4.7 | 16.4 |
| Mountain | | | | |
| Clear Creek | 33.5 | -684 | 3.5 | 12.7 |
| Gilpin | 36.5 | -137 | 2.2 | 18.7 |
| Park | 39.5 | -216 | 1.5 | 8.4 |
| Dry Plains | | | | |
| Douglas | 31.4 | 816 | 1.3 | 10.9 |
| Elbert | 20.3 | -1,066 | 1.6 | 12.6 |
| Sedgwick | 16.2 | -1,513 | 4.7 | 16.3 |
| Washington | 15.8 | -1,918 | 1.5 | 10.0 |
| Cheyenne | 17.7 | -792 | 2.0 | 12.9 |
| Deuel | 12.6 | -710 | 2.8 | 14.7 |
| Keith | 18.6 | -969 | 1.8 | 11.2 |
| Kimball | 42.6 | 2,209 | 1.4 | 9.0 |
| Laramie | 35.2 | 6,372 | 2.8 | 11.0 |
| Colorado | 30.9 | 163,557 | 3.4 | 11.5 |
| Nebraska | 18.6 | -120,971 | 2.9 | 15.4 |
| Wyoming | 28.1 | -10,812 | 2.9 | 11.7 |
| Mountain Region | 28.2 | 563,900 | 3.6 | 15.2 |
| West No. Cent. Reg. | 18.5 | 800,368 | 2.8 | 11.8 |
| United States | 17.4 | 2,972,995 | 5.4 | 13.7 |

Source: County and City Data Book, 1962, Table 2

TABLE a–16

MIGRATION AS AN ELEMENT OF POPULATION CHANGE, FOR SOUTH PLA
SUBREGIONS, COUNTIES AND COLORADO, 1940-50 AND 19

| Area | 1940-1950 | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1940-49 Births | 1940-49 Deaths | Natural Increase | 1940-50 Pop. Change | 1940-50 Migration | Migr. as a Percent of Change | 1950- Birt |
| Metropolitan | | | | | | | |
| Adams | 6,212 | 2,079 | 4,133 | 17,753 | 13,620 | 77 | 21, |
| Arapahoe | 10,234 | 3,181 | 7,053 | 19,975 | 12,922 | 65 | 22, |
| Boulder | 8,382 | 4,104 | 4,278 | 10,858 | 6,580 | 61 | 13, |
| Denver | 81,608 | 41,000 | 40,608 | 93,374 | 52,766 | 57 | 115, |
| Jefferson | 8.390 | 3.273 | 5.117 | 24.962 | 19,845 | 80 | 21, |
| | 114,826 | 53,637 | 61,189 | 166,922 | 105,733 | 63 | 194, |
| Irrigated Plains | | | | | | | |
| Larimer | 7,776 | 3,425 | 4,351 | 8,,015 | 3,664 | 46 | 10, |
| Logan | 4,256 | 1,375 | 2,881 | -1,,183 | -4,064 | 343 | 5, |
| Morgan | 4,036 | 1,649 | 2,387 | 860 | -1,527 | 178 | 5, |
| Weld | 14,858 | 5,344 | 9,514 | 3.,757 | -5,757 | 153 | 17, |
| | 30,926 | 11,793 | 19,133 | 11,,449 | -7,684 | 67 | 39, |
| Mountain | | | | | | | |
| Clear Creek | 600 | 406 | 194 | --495 | -689 | 139 | |
| Gilpin | 159 | 139 | 20 | --775 | -775 | 103 | |
| Park | 409 | 199 | 210 | -1..402 | -1.612 | 115 | |
| | 1,168 | 744 | 424 | -2,,672 | -3,096 | 116 | 1, |
| Dry Plains | | | | | | | |
| Douglas | 604 | 303 | 301 | 11 | -290 | 2,636 | |
| Elbert | 880 | 354 | 526 | --983 | -1,509 | 153 | |
| Sedgwick | 1,195 | 399 | 796 | --199 | -995 | 500 | 1, |
| Washington | 1,502 | 556 | 946 | --816 | -1,762 | 216 | 1, |
| Cheyenne | 2,640 | 836 | 1,804 | 2,,576 | 772 | 30 | 4, |
| Deuel | 546 | 238 | 308 | --250 | -558 | 223 | |
| Keith | 1,582 | 555 | 1,027 | --884 | -1,911 | 216 | 2, |
| Kimball | 1,078 | 307 | 771 | 370 | -401 | 108 | 1, |
| Larimie | 9.523 | 2.794 | 6.729 | 14..011 | 7.282 | 52 | 15. |
| | 19,550 | 6,342 | 13,208 | 13,,836 | 628 | 45 | 29, |
| South Platte River Basin | 166,470 | 72,516 | 93,954 | 189,,535 | 95.581 | 50 | 263, |

Source: Tables a-4, a-13 and a-14

TABLE a-16

MENT OF POPULATION CHANGE, FOR SOUTH PLATTE RIVER BASIN,
S, COUNTIES AND COLORADO, 1940-50 AND 1950-60

| -1950 | | | 50-1960 | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1940-50 Pop. Change | 1940-50 Migration | Migr. as a Percent of Change | 1950-59 Births | 1950-59 Deaths | Natural Increase | 1950-60 Pop. Change | 1950-60 Migration | Migr. as a Percent of Change |
| 17,753 | 13,620 | 77 | 21,078 | 3,279 | 17,799 | 80,062 | 62,263 | 78 |
| 19,975 | 12,922 | 65 | 22,448 | 4,907 | 17,541 | 61,301 | 43,760 | 71 |
| 10,858 | 6,580 | 61 | 13,477 | 4,948 | 8,529 | 25,958 | 17,429 | 67 |
| 93,374 | 52,766 | 57 | 115,662 | 46,656 | 69,006 | 78,101 | 9,095 | 12 |
| 24,962 | 19,845 | 80 | 21,498 | 5,383 | 16,115 | 71,833 | 55,718 | 78 |
| 166,922 | 105,733 | 63 | 194,163 | 65,173 | 126,990 | 317,255 | 188,265 | 59 |
| | | | | | | | | |
| 8,015 | 3,664 | 46 | 10,742 | 4,259 | 6,483 | 9,789 | 3,306 | 34 |
| -1,183 | -4,064 | 343 | 5,511 | 1,598 | 3,913 | 3,115 | -798 | 26 |
| 860 | -1,527 | 178 | 5,885 | 1,639 | 4,246 | 3,118 | -1,128 | 36 |
| 3,757 | -5,757 | 153 | 17,351 | 5,705 | 11,646 | 4,840 | -6,806 | 141 |
| 11,449 | -7,684 | 67 | 39,489 | 13,201 | 26,288 | 20,862 | -5,426 | 26 |
| | | | | | | | | |
| -495 | -689 | 139 | 530 | 342 | 188 | -496 | -684 | 138 |
| -775 | -775 | 103 | 120 | 133 | -13 | -165 | -152 | 92 |
| -1,402 | -1,612 | 115 | 352 | 169 | 183 | -48 | -231 | 481 |
| -2,672 | -3,096 | 116 | 1,002 | 644 | 358 | -709 | -1,067 | 150 |
| | | | | | | | | |
| 11 | -290 | 2,636 | 881 | 349 | 532 | 1,309 | 777 | 59 |
| -983 | -1,509 | 153 | 677 | 331 | 346 | -769 | -1,115 | 145 |
| -199 | -995 | 500 | 1,116 | 384 | 732 | -853 | -1,585 | 186 |
| -816 | -1,762 | 216 | 1,635 | 585 | 1,050 | -895 | -1,945 | 217 |
| 2,576 | 772 | 30 | 4,555 | 993 | 3,562 | 2,747 | -815 | 30 |
| -250 | -558 | 223 | 633 | 226 | 407 | -205 | -612 | 299 |
| -884 | -1,911 | 216 | 2,068 | 592 | 1,476 | 509 | -967 | 190 |
| 370 | -401 | 108 | 1,903 | 438 | 1,465 | 3,692 | 2,227 | 60 |
| 14,011 | 7,282 | 52 | 15,660 | 3,377 | 12,283 | 12,487 | 204 | 2 |
| 13,836 | 628 | 45 | 29,128 | 7,275 | 21,853 | 18,022 | -3,831 | 21 |
| | | | | | | | | |
| 189,535 | 95,581 | 50 | 263,782 | 86,293 | 177,489 | 355,430 | 177,941 | 50 |

Migration constituted the largest share of positive population change in the Denver suburban counties during both decades and a significant share in the urbanizing plains counties of Larimer, Douglas, and Kimball counties in the 1950-60 decade. The small part migration appears to have played in the population change of Laramie County in 1950-60 is not explained. It may just be a statistical anomaly. Migration is seen to be the major element in population change but in an outward direction in all the mountain counties and all but four plains counties. The seemingly impossible situation of migration accounting for more than 100 percent of population change comes about when the total population at the end of the decade is less than at the beginning. In these cases the number of out-migrants is the difference between the two census plus the number of people who would normally have been added to the population through natural increase. In nearly every case this outward movement seems to have been smaller in percentage terms in the 1950-60 decade than in the 1940-50 decade.

### Review of factors and conditions influencing population growth

The charts, Figures a-4 through a-8 (Appendix B) are suggested as aids in the most critical portion of a population study and preparation of population estimates, i.e., ferreting out the underlying causes behind past population change and identifying those factors most likely to affect future population change. It should be apparent to the practitioner that the process of identifying these causative factors cannot be a mechanical one. The accompanying charts in Appendix B are suggestive only. The practitioner's success at this step of the game will depend upon his insight into the region being investigated, which will come from his entire background and study.

The past population growth of the South Platte River Basin has been based on extractive industries. The first large inflow of people was to the gold and silver mines in the mountains along the basin's western border. This was followed by irrigated farming and livestock raising in the irrigated plains and livestock raising on the dry plains. Towns grew as service centers for this mining and agricultural activity. Denver in particular became a distribution and transportation center whose services expanded to include many government activities. Nevertheless, general population movement west bypassed the area to settle on the Pacific coast. The rapid population growth of the past two decades has resulted from the coming of age of another major resource of the area, climate, and easy access to a variety of recreation resources. Utilization of this resource on a large scale was made possible by the improvement and proliferation of highways and other transportation facilities, and by the rising importance of technology-based industries whose products are of small bulk but high value and whose most important input is skilled labor. These are industries generally described as electronic or space or missile industries. This development has in part overcome the area's access to market and transportation disadvantages. The remoteness of the area to the major population centers of the West and East Coasts and the Great Lakes manufacturing belt will continue to be a limiting factor on growth, but population of the area is now of a size that it will benefit from agglomeration advantages.

Development of projections

Finally, having gathered together the basic data of population change, and looking at past trends and considering some of the possible causative factors involved; we come to the point of projecting this population to future dates. In this case population change is projected one hundred years into the future as is required by some federal government projects. As it is pointed out in Appendix A, Population Projection Methods, the further into the future population is projected the greater the error is likely to be. Analyses of past projections have shown that ten-year projections are likely to have twice the margin of error of five-year projections and twenty-year projections twice again that amount. Hence it should be kept in mind that the population figures for 1980, 2000, 2040, etc., are simply examples of what the population on those dates might be if past and present trends modified in the light of present knowledge and expectations, were to continue into the future, but shouldn't be taken too literally.

These projections are based on the assumption that there will be no major upheaval in the national economy; that it will continue a normal peacetime expansion with no great cyclical fluctuations or wars to disturb it. On the other hand, it is assumed that world tensions will remain such that the United States will continue to devote about the same portion of its gross national product to defense and defense-related activities. This is important in the economy of the South Platte River Basin. The institutional framework within which the economy operates will remain much the same. It is assumed that birth rates will continue to decline moderately[3] while there will be little change in mortality rates.

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[3] Balestra and Rao, Op. Cit., p. 30 in ranking all the states by size of birth rate found all three states in which the South Platte River Basin lies declined in ranking between 1940, 1950 and 1960 - Colorado 29th to 31st to 36th; Nebraska 13th to 22nd to 25th; Wyoming 32nd, 32nd to 34th - and in general a convergence of all states toward an equilibrium rate of about 24 births per 1000 population.

Findings:

The population of the South Platte River Basin is expected to increase from 1,215,000 in 1960 to 2,000,000 in 1980 to 3,000,000 in 2000 and 6,000,000 in 2070 (Table a-17). This represents an annual growth rate of 2.2 percent in the decades of the 1970's and '80's and then decrease to 1.4 percent after the year 2000 and to less than one percent after 2020. Migration into the area is expected to remain high for several decades then slowly decline towards the national average. The largest percentage and absolute increases will be in the metropolitan counties. Larimer County in the irrigated plains and perhaps even the western edge of Weld County will grow as rapidly, becoming in effect part of Metropolitan Denver. The urban counties in the dry plains counties, particularly Cheyenne, Sidney, and Kimball, will continue to grow rapidly while the surrounding plains counties decline in population. The declining trend in the mountain counties will be reversed as this becomes an important recreation service adjunct to Metropolitan Denver, although it is unlikely that this will entail a large permanent population.

Four methods of projection were used--arithmetic, geometric, ratio and a simple component method. Tables a-19 to a-22 (Appendix B) contain the working figures for arithmetic projections; Tables a-23 to a-26

TABLE a-17

## PROJECTIONS OF FUTURE POPULATION OF SOUTH PLATTE RIVER BASIN AND SUBREGIONS, 1970-2070

| Area | Projection | 1970 | 1980 | 1990 | 2000 | 2010 | 2020 |
|---|---|---|---|---|---|---|---|
| | | | 1,810,000 MRCFS | | 3,051,000 | | 5,075,000 |
| Metropolitan | Maximum | 1,400,000 | 1,800,000 | 2,400,000 | 3,300,000 | 4,500,000 | 6,300,000 |
| | Judgment | 1,250,000 | 1,600,000 | 2,000,000 | 2,500,000 | 2,850,000 | 3,300,000 |
| | Minimum | 1,200,000 | 1,500,000 | 1,800,000 | 2,200,000 | 2,500,000 | 2,800,000 |
| Irrigated Plains | Maximum | 210,000 | 250,000 | 320,000 | 370,000 | 425,000 | 470,000 |
| | Judgment | 200,000 | 235,000 | 290,000 | 335,000 | 385,000 | 435,000 |
| | Minimum | 185,000 | 210,000 | 230,000 | 250,000 | 270,000 | 290,000 |
| Mountain | Maximum | 7,000 | 7,200 | 7,400 | 7,600 | 7,800 | 8,000 |
| | Judgment | 5,200 | 5,300 | 5,400 | 5,700 | 6,000 | 6,200 |
| | Minimum | 4,500 | 3,000 | 2,500 | 2,000 | 2,000 | 2,000 |
| Dry Plains | Maximum | 150,000 | 190,000 | 225,000 | 300,000 | 350,000 | 400,000 |
| | Judgment | 145,000 | 180,000 | 210,000 | 275,000 | 325,000 | 360,000 |
| | Minimum | 135,000 | 150,000 | 170,000 | 195,000 | 200,000 | 220,000 |
| | | | | | | | 6,290,000 |
| South Platte River Basin | Maximum | 1,700,000 | 2,100,000 | 2,900,000 | 3,900,000 | 5,000,000 | 7,000,000 |
| | Judgment | 1,600,200 | 2,020,300 | 2,505,400 | 3,115,700 | 3,566,000 | 4,101,000 |
| | Minimum | 1,500,000 | 1,700,000 | 2,000,000 | 2,300,000 | 2,900,000 | 3,300,000 |

Source: Tables a-18 through a-29, Appendix B

TABLE a-17 Continued

| Area | Projection | 2030 | 2040 | 2050 | 2060 | 2070 |
|---|---|---|---|---|---|---|
| Metropolitan | Maximum | 8,600,000 | 11,800,000 | 16,300,000 | 22,400,000 | 30,800,000 |
| | Judgment | 3,550,000 | 3,800,000 | 4,200,000 | 4,500,000 | 4,800,000 |
| | Minimum | 3,200,000 | 3,500,000 | 3,800,000 | 4,100,000 | 4,400,000 |
| Irrigated Plains | Maximum | 520,000 | 575,000 | 610,000 | 660,000 | 700,000 |
| | Judgment | 460,000 | 500,000 | 550,000 | 610,000 | 650,000 |
| | Minimum | 310,000 | 330,000 | 350,000 | 375,000 | 400,000 |
| Mountain | Maximum | 8,200 | 8,400 | 8,600 | 8,800 | 9,000 |
| | Judgment | 6,400 | 6,500 | 6,700 | 6,800 | 7,000 |
| | Minimum | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
| Dry Plains | Maximum | 450,000 | 500,000 | 550,000 | 600,000 | 700,000 |
| | Judgment | 400,000 | 450,000 | 490,000 | 530,000 | 575,000 |
| | Minimum | 240,000 | 260,000 | 280,000 | 295,000 | 325,000 |
| South Platte River Basin | Maximum | 9,000,000 | 12,000,000 | 15,000,000 | 20,000,000 | 30,000,000 |
| | Judgment | 4,616,400 | 4,756,500 | 5,246,700 | 5,646,800 | 6,032,000 |
| | Minimum | 3,700,000 | 4,000,000 | 4,400,000 | 4,700,000 | 5,000,000 |

Source: Tables a-18 through a-29, Appendix B

(Appendix B), the geometric computations; Tables a-27 to a-29 (Appendix B) the ratio method; and Table a-30 the component projection based on the data of Tables a-13, a-14, and a-16. Tables a-31 to a-35 (Appendix B) present comparisons of projections obtained by each of these methods for each of the subregions. It does not appear that the simple component method yields results any different from a straight geometric trend projection, and it is therefore questionable whether going through the calculations involved adds any more to our knowledge than the simpler geometric trend extrapolation. Supporting graphs used in calculating ratio changes and visualizing population trends are included as Charts a-2 to a-14 (Appendix B) while Chart a-1 illustrates the comparative magnitude of population in each of the subregions.

Regional Reconnaissance

Region:
South Platte River Basin
Investigator:
Karl Starch
Date:
1966

| I. Population Trends | II | III | IV | V |
|---|---|---|---|---|
| This is the largest (1.4 million in 1965) and fastest growing (63% increase between 1950 and 1965) population center in the Rocky Mountain Region. Its rate of growth has been double the U.S. rate each decade since 1940. There is a pronounced concentration of population within the region along the eastern slop of the mountains, and a secondary concentration along the South Platte River. It is a predominantly urban region. Three-fourths of the area population lives in metropolitan Denver. In addition, there are 30 towns over 1000 population and 70 towns with populations between 100 and 1000 in the region outside the metropolitan area. The region is, in fact, more highly urbanized (83%) than the U.S. (70%). Only 5% of the regions population lives on farms. Population density is 43 persons per square mile (ranging from 2 per square mile in the mountain subregion to 254 per square mile in the metropolitan subregion) compared to 50.5 persons per square mile for the U.S. as a whole. This is an island of high density population in the relatively unpeopled plains and mountains surrounding it.<br>The population here is somewhat younger (median age 26) than the United States (median age 30). The increase in population has been primarily in the productive age groups. Both of which are a function of the fact that migration has been the major factor in population growth. The proportion of non whites (2%) is much smaller than the U.S. (11%). Growth trends vary greatly between the metropolitan and non-metropolitan areas of the basin.<br>Population is expected to increase to about 2 million by 1980 and 3 million by the year 2000. This represents an annual growth rate of 2.2% through the 1970's, 1.4% after 1980 and 1% after 2000. The migration rate will decline towards the national average. Most of the increase will take place in the metropolitan counties. | Environment | Economic Activities | Strategic Factors | Recommendations |

Fig. a-3 --Partial Reconnaissance Review Sheet, I. Population Trend

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## b. The Environment

### 1. Location, topography, and climate resources

The South Platte River Basin is located very close to the geographic center of the United States. In terms of latitude it is midway between the northern and southern boundaries of the United States (between the 39th and 42nd parallels). Longitudinally it is just west of center, being entirely west of the 100th meridian (between 101st and 107th meridian). It is shaped like an irregular teardrop falling from the east towards the west southwest. The dimensions of the main body of this drop are roughly 160 miles north to south by 130 miles east to west, with a long tail stretching off to the east. Located by political boundaries, the South Platte River Basin lies mostly within the State of Colorado, comprising most of the northeastern quarter of that state. It overlaps onto the southeast corner of Wyoming and a narrow sliver of the southwestern Nebraska panhandle. The basin is hence somewhat remote from the major centers of activity and markets of the United States. The basin drains an area of 24,300 square miles (as a matter of convenience, 28,939 square miles, the total area of the counties involved, is used as the area of the basin wherever comparisons are made in the description that follows). The portion of the basin within the boundaries of each of the three states is:

| | | |
|---|---|---|
| Colorado | 19,450 sq. miles | 80% of total basin |
| Nebraska | 2,800 | 12% |
| Wyoming | 2,050 | 8% |
| SPRB | 24,300 | 100% |

It is a part of the larger Missouri River drainage basin, comprising a little less than one-twentieth of that drainage system.

The South Platte River is approximately 440 miles long from its source to its confluence with the North Platte River. It has its origin in the Mosquito Range of the Rocky Mountains which divides the South Platte Basin from the headwaters of the Arkansas River. The South Fork and Middle Fork drop abruptly off mountain peaks 14,000 feet high, join to flow southeasterly across South Park, a large (800 sq. miles) intermountain plateau 10,000 feet high, turn abruptly northeast to strike through the Front Range of the Rockies onto the plains where it is joined by Plum Creek flowing from the south. In the next twenty miles roughly the stretch of the river flowing through Metropolitan Denver, it is augmented by Cherry Creek from the south and Bear Creek and Clear Creek from the mountains to the west. The river flows in a northeasterly direction for nearly one hundred miles (see Figure 2). It then turns abruptly east for sixty miles. St. Vrain Creek, the Big Thompson

River, and the Cache la Poudre River, all flowing out of the Front Range, join the South Platte at about this eastward bending point. The river again swings northeast for ninety-five miles to the Colorado-Nebraska border, Then eighty miles of easterly flow through western Nebraska brings it to its confluence with the North Platte. A number of streams, mostly intermittent, drain the plains portion of the basin. Flowing from the south, these are Boxelder, Kiowa, Bijou, Badger and Beaver Creeks. Tributaries flowing in from the north include Lonetree, Owl, Crow, Pawnee, and Cedar. Most of these streams from the north never reach the South Platte, but are intercepted by irrigation canals. Lodgepole Creek roughly parallels the main stream of the river 50 miles to the north of it through most of its eastward flow, draining the southeast corner of Wyoming and the southern tier of Nebraska panhandle counties joining the South Platte near the Colorado-Nebraska border. The stretch of the river from Denver to Nebraska is paralleled on either or both sides by numerous irrigation canals and reservoirs, particularly along the mountain front where there is a multitude of small lakes.

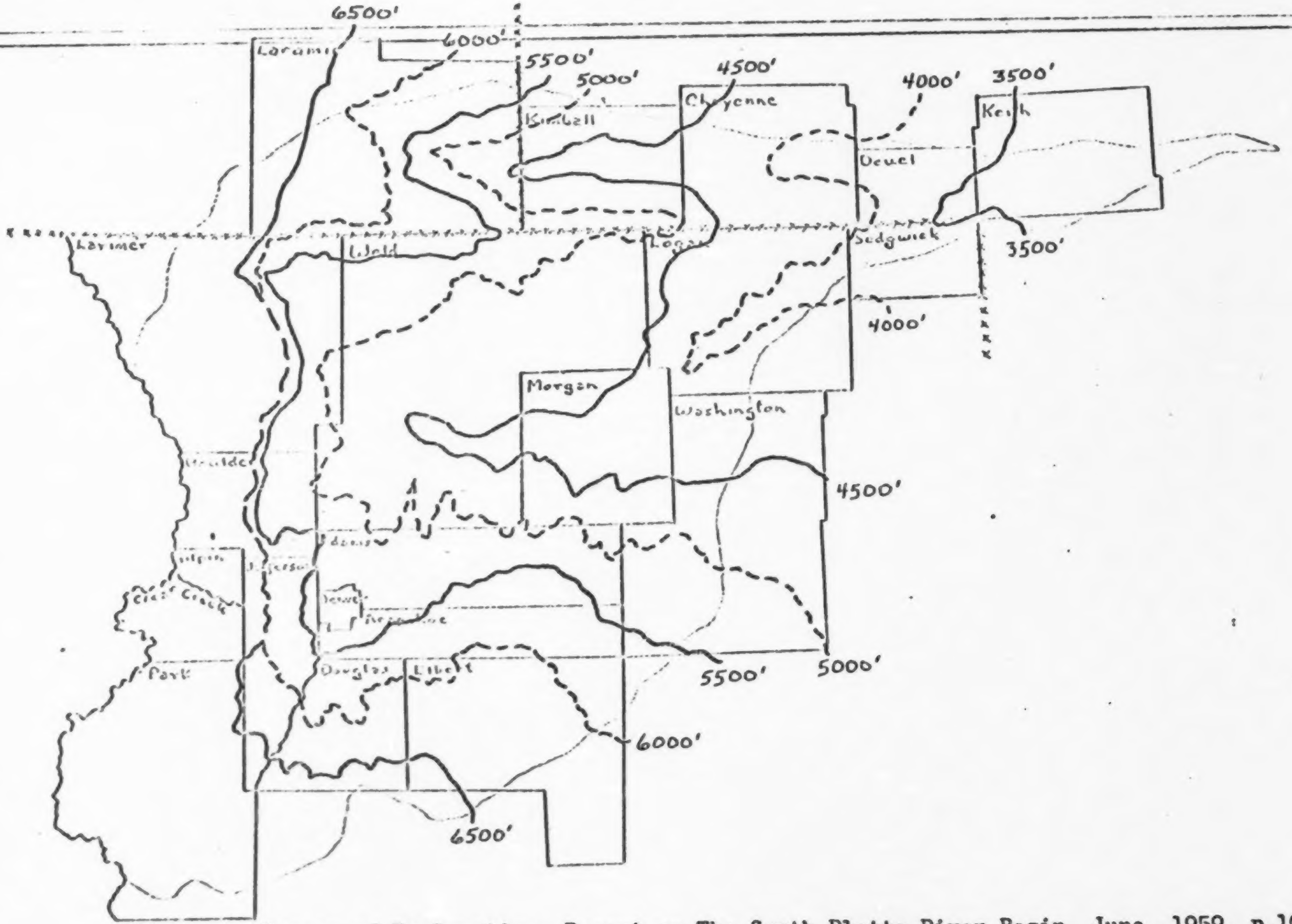
The varied topography of the South Platte basin is reflected in the gradient of various reaches of the river. Near the source it falls 1000 feet per mile, across South park, 20 feet per mile, in the lower

South Platte canyon before reaching the plains, 68 feet per mile, in the vicinity of Denver the fall is 15 feet per mile, while across the plains the average gradient is 8 feet per mile. This points out the two major physiographic regions which make up the basin:

1. The Southern Rocky Mountain Province of the Rocky Mountain System in which lies 25 percent of the basin, and
2. The Great Plains province of the Interior Plains (or Colorado Piedmont section of the Great Plains physiographic province).

All the major tributaries of the South Platte have their origin in the mountains which form the western edge of the basin. These ranges include, north to south, the Laramie range, Front range, Mosquito range, and Rampart Range. Along the central portion of these mountains the boundary of the South Platte Basin is the continental divide itself. This is probably the most concentrated collection of high mountain peaks in the United States, and includes a dozen peaks over 14,000 feet in altitude. The mountains fall quickly to plains of 5,700 elevation with little or no foothills except a series of hogbacks which parallel the mountain front. These long, narrow ridges, 300-500 feet high are the exposed ends of rock strata that dip off to the east, underlying the plains portion of the basin. This is a large structural basin called the Denver-Julesburg Basin. Geologically, the area was formed by successive periods of seas and lakes, uplift and erosion and is now underlain by strata of sandstone, limestone, shale, and coal. The Colorado Piedmont which comprises the major portion of the basin is a broadly rolling plain through which the South Platte flood plain cuts a swath varying from one to three miles wide with the river generally tending towards the south and east side of the flood plain. From the flood plain rise two terraces or benches, the first a rather narrow terrace about 10-20 feet higher than the flood plain, the second a broader and more prominent bench rises 20-40 feet above the flood plain and is perhaps 4 miles wide. Older higher terraces have been eroded into a gently rolling surface. Elevations slope gently eastward from 5700 feet at the mountains to 2800 feet at the mouth of the South Platte River. An escarpment which bounds the basin on the east and north is the boundary between the Colorado Piedmont and the High Plains. The Wyoming and Nebraska portions of the basin are on the High Plains. The topography here varies little from the broad, flat gently rolling surface of the Piedmont.

Being west of the one hundredth meridian has a significance other than locational. The one hundredth meridian is the approximate line of 20 inch rainfall.


6500'
6000'
5500'
5000'
4500'
4000'
3500'
Laramie
Kimball
Cheyenne
Deuel
Keith
Sedgwick
Logan
3500'
4000'
Larimer
Weld
Morgan
Washington
4500'
Boulder
Adams
Gilpin
Jefferson
Clear Creek
Denver
Arapahoe
Park
Douglas
Elbert
5500'
5000'
6000'
6500'

Source: Bureau of Reclamation, Report on The South Platte River Basin, June, 1959, p.10

Fig. b-1 --Altitude of The South Platte River Basin

The relative scarcity of rainfall is a distinguishing characteristic of the country west of this line, including the South Platte River Basin. Although semiaridity is the dominating climatic characteristic of the basin there is considerable variation in climate within the basin due to differences in topography and elevation. There is, essentially, a mountain climate, a plains climate and a transitional zone between the two.

The plains portion of the area experiences warm summers and moderately cold winters with a great deal of sunshine the year around. The normal monthly temperature range is from about 25° in January to about 75° in July. Although extremes range from a low of -45° to a high of 109°. A greater variation in daily and seasonal climate is more characteristic of the plains than the mountains. Normal precipitation is about 17 inches annually on the eastern plains but decreases to about 13 inches annually as one moves west across the basin. Most of this precipitation falls between April and August, typically from summer thunderstorms. However, it is often erratic. Semiaridity means irregularity in occurrence of rainfall as much as it means small total amount. Yearly rainfall has ranged from as low as five inches to as much as 28 inches. There are often prolonged dry spells during the growing season which makes dry farming hazardous and irrigation essential for stable agricultural development. Average length of the growing season is about 145 days and extends from early May to the end of September. The plains have moderately high winds (average about 9 mph) generally from the south though encroachment of polar air in the fall and winter bring frequent severe cold waves to the plains.

The Mountain portion of the basin has greater precipitation, lower temperatures and shorter growing seasons. Generally, precipitation increases and temperatures decrease with increase in elevation. Local topography can modify the general climate considerably. The highest precipitation in the basin occurs in the mountains with up to 50 inches on the Continental Divide. South Park, sheltered between mountain ranges, has the smallest amount of precipitation in the basin, an annual average of just 11 inches (and a record low of just 3½ inches). Snowfall is generally heavy in the mountains with 250 or more inches a year not uncommon.

Both summer and winter temperatures tend to be more moderate in the transition zone along the east side of the mountains than on either the mountains or the plains and day-to-day weather is comparatively more uniform. This mild sunshine-filled climate is becoming recognized as a major resource and along with the scenic topography, an important factor in the rapid growth in population in this mountain front area of the basin.

Tables b-1 to b-6 and Figures b-2 to b-5 give further detail on the climate of the region.

TABLE b-1

NORMAL MONTHLY AND ANNUAL PRECIPITATION IN INCHES,
FOR SELECTED STATION IN THE SPRB

| Station | County | Yrs. of Record | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Ann. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boulder | Boulder | 68 | .72 | .83 | 1.75 | 2.75 | 3.36 | 1.29 | 1.41 | 1.64 | 1.25 | 1.39 | .96 | .62 | 18.57 |
| Byers | Arapahoe | 38 | .43 | .47 | .87 | 1.86 | 2.54 | 1.58 | 2.01 | 1.49 | 1.14 | .72 | .54 | .40 | 14.05 |
| Denver(city) | Denver | 89 | .49 | .63 | 1.07 | 1.85 | 2.41 | 1.27 | 1.22 | 1.09 | .91 | .93 | .62 | .40 | 12.89 |
| Longmont | Boulder | 59 | .35 | .44 | .77 | 1.63 | 2.66 | 1.45 | 1.09 | .88 | 1.06 | .92 | .46 | .32 | 12.03 |
| Hartsell | Park | 41 | .25 | .27 | .41 | .80 | .86 | 1.07 | 2.82 | 2.31 | 1.09 | .59 | .32 | .27 | 11.06 |
| | | | | | | | | | | | | | | | |
| Estes Park | Larimer | 52 | .53 | .82 | 1.05 | 2.03 | 2.22 | 1.72 | 2.13 | 1.86 | 1.25 | 1.00 | .82 | .65 | 16.07 |
| Ft. Collins | Larimer | 80 | .38 | .50 | .95 | 1.86 | 2.90 | 1.73 | 1.15 | 1.53 | 1.20 | 1.08 | .49 | .42 | 14.19 |
| Ft. Morgan | Morgan | 70 | .34 | .27 | .71 | 1.51 | 2.58 | 1.73 | 1.76 | 1.38 | 1.20 | .73 | .36 | .29 | 12.86 |
| Greeley | Weld | 71 | .35 | .36 | .72 | 1.45 | 2.49 | 1.42 | 1.19 | .81 | .76 | .85 | .39 | .33 | 11.12 |
| Crover | Weld | 60 | .33 | .43 | .73 | 1.17 | 2.61 | 2.03 | 2.08 | 1.51 | 1.06 | .65 | .40 | .30 | 13.30 |
| Sterling | Logan | 51 | .33 | .32 | .76 | 1.50 | 2.60 | 2.58 | 1.84 | 1.54 | 1.12 | .75 | .41 | .35 | 14.10 |
| | | | | | | | | | | | | | | | |
| Akron | Washington | 46 | .40 | .45 | 1.03 | 1.83 | 2.88 | 2.45 | 2.82 | 1.94 | 1.46 | 1.04 | .61 | .57 | 17.48 |
| Julesburg | Sedgwick | 57 | .41 | .44 | 1.00 | 1.74 | 2.94 | 2.78 | 2.20 | 1.93 | 1.23 | .73 | .50 | .42 | 16.32 |
| Limon | Elbert | 51 | .41 | .42 | .95 | 1.55 | 2.32 | 1.79 | 2.20 | 2.25 | 1.32 | .79 | .56 | .38 | 14.94 |
| Sedgwick | Sedgwick | 28 | .36 | .38 | .93 | 1.95 | 3.07 | 3.05 | 2.46 | 2.07 | 1.30 | .77 | .45 | .39 | 17.18 |
| Cheyenne | Laramie | 78 | .42 | .64 | 1.02 | 1.99 | 2.43 | 1.61 | 2.10 | 1.55 | 1.20 | .96 | .52 | .55 | 14.99 |
| Lodgepole | Cheyenne | 51 | .38 | .54 | .96 | 2.34 | 2.78 | 2.65 | 2.32 | 2.03 | 1.36 | .93 | .57 | .53 | 17.39 |
| Ogallala | Keith | 32 | .41 | .40 | .93 | 2.52 | 3.04 | 2.85 | 2.44 | 2.48 | 1.62 | 1.08 | .49 | .49 | 18.75 |

Source: Adapted from Colorado State Planning Division, Colorado Yearbook, 1962-64, p. 485-491

## TABLE b-2

## RANGE OF PRECIPITATION, AT SELECTED STATIONS IN THE SOUTH PLATTE RIVER BASIN

| Station | County | Yrs. of Record | Mean for All Years | Maximum in One Year | Minimum in One Year | Range Between Maximum and Minimum |
|---|---|---|---|---|---|---|
| Boulder | Boulder | 57 | 18.32 | 29.09 | 8.80 | 20.29 |
| Byers | Arapahoe | 38 | 12.73 | 22.65 | 7.23 | 15.42 |
| Denver | Denver | 78 | 14.05 | 22.96 | 7.58 | 15.38 |
| Longmont | Boulder | 49 | 13.83 | 22.67 | 6.42 | 16.25 |
| Hartzell | Park | 41 | 11.06 | 17.44 | 3.55 | 13.89 |
| Idaho Springs | Clear Creek | 52 | 15.20 | 24.79 | 5.32 | 18.79 |
| Longs Peak | Boulder | 51 | 21.89 | 38.08 | 13.93 | 24.15 |
| Silver Lake | Boulder | 39 | 30.90 | 68.30 | 16.69 | 51.61 |
| Estes Park | Larimer | 41 | 18.30 | 32.47 | 9.43 | 23.04 |
| Ft. Collins | Larimer | 70 | 14.79 | 27.57 | 5.65 | 21.92 |
| Ft. Morgan | Morgan | 59 | 13.48 | 26.51 | 5.15 | 21.36 |
| Greeley | Weld | 62 | 12.45 | 20.89 | 5.40 | 15.49 |
| Sterling | Logan | 41 | 14.90 | 22.25 | 9.92 | 12.33 |
| Akron | Washington | 35 | 17.34 | 24.67 | 8.13 | 16.54 |
| Cheyenne | Laramie | 78 | 14.99 | 23.67 | 5.04 | 18.65 |
| Julesburg | Sedgwick | 46 | 16.56 | 37.07 | 7.75 | 29.32 |
| Lodgepole | Cheyenne | 51 | 17.39 | 28.36 | 10.00 | 18.36 |
| Ogallala | Keith | 32 | 18.75 | 38.77 | 6.65 | 32.12 |
| Sidney | Cheyenne | 21 | 16.21 | 27.70 | 7.70 | 20.00 |
| Sedgwick | Sedgwick | 21 | 17.02 | 28.72 | 6.89 | 21.83 |

Source: U.S. Weather Bureau Records as reported in U.S. Bureau of Reclamation, Report on The South Platte River Basin, 1959, p.16

## TABLE b-3

## AVERAGE ANNUAL SNOWFALL AT SELECTED STATIONS IN THE SOUTH PLATTE RIVER BASIN

| Station | County | Elev. | Pre-1930 Period | | 1931-1960 Period | |
|---|---|---|---|---|---|---|
| | | | Yrs.of Record | Avg. Rec. (inches) | Yrs.of Record | Avg. Rec. (inches) |
| Boulder | Boulder | 5,400 | 34 | 66.9 | 28 | 80.5 |
| Byers | Arapahoe | 5,207 | - | - | 27 | 44.6 |
| Denver (city) | Denver | 5,221 | 26 | 62.8 | 35 | 56.7 |
| Longmont | Boulder | 4,950 | 25 | 42.8 | 26 | 34.2 |
| Parker | Douglas | 6,300 | - | - | 28 | 53.7 |
| Silver Lake | Boulder | 10,200 | 18 | 281.3 | 17 | 249.4 |
| Hartzell | Park | 8,866 | 20 | 43.6 | 24 | 47.9 |
| Idaho Springs | Clear Creek | 7,569 | 26 | 74.3 | 23 | 78.2 |
| Estes Park | Larimer | 7,525 | 21 | 115.8 | 19 | 84.1 |
| Ft. Collins | Larimer | 5,004 | 37 | 42.3 | 29 | 43.4 |
| Ft. Lupton | Weld | 4,908 | 20 | 44.4 | 18 | 37.2 |
| Ft. Morgan | Morgan | 4,321 | 30 | 24.9 | 20 | 26.6 |
| Greeley | Weld | 4,648 | 35 | 32.7 | 20 | 32.3 |
| Sterling | Logan | 3,939 | 21 | 32.3 | 19 | 31.2 |
| Akron | Washington | 4,582 | 16 | 33.6 | 24 | 42.8 |
| Julesburg | Sedgwick | 3,469 | 20 | 31.4 | 21 | 27.0 |
| Limon | Elbert | 5,360 | 20 | 29.1 | 28 | 32.8 |
| Cheyenne | Laramie | 6,088 | - | - | 66 | 56.2 |
| Lodgepole | Cheyenne | - | - | - | 38 | 33.0 |
| Ogallala | Keith | - | - | - | 24 | 29.1 |

Source: Same as Table b-1

## TABLE b-4

### AVERAGE MONTHLY TEMPERATURES AT SELECTED STATIONS IN THE SPRB

| Stations | County | Yrs. of Record | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boulder | Boulder | 54 | 32.3 | 33.4 | 39.6 | 48.2 | 56.3 | 65.8 | 71.6 | 70.6 | 62.8 | 52.2 | 41.4 | 33.6 |
| Byers | Arapahoe | 27 | 27.9 | 29.6 | 37.2 | 46.6 | 55.7 | 64.1 | 72.6 | 71.1 | 62.5 | 51.4 | 37.9 | 30.6 |
| Denver | Denver | 78 | 29.8 | 32.7 | 39.3 | 47.1 | 56.2 | 66.3 | 72.2 | 70.7 | 62.9 | 51.2 | 39.8 | 32.3 |
| Longmont | Boulder | 49 | 26.6 | 29.7 | 37.1 | 47.3 | 56.1 | 63.0 | 70.9 | 69.2 | 60.7 | 49.1 | 36.6 | 28.2 |
| | | | | | | | | | | | | | | |
| Longs Peak | Boulder | 47 | 22.2 | 22.1 | 26.6 | 33.6 | 41.7 | 50.8 | 55.4 | 55.0 | 48.5 | 39.4 | 32.0 | 23.2 |
| Idaho Springs | Clear Creek | 51 | 26.6 | 28.0 | 33.0 | 40.3 | 48.2 | 57.6 | 62.5 | 61.5 | 54.9 | 44.5 | 34.5 | 28.1 |
| | | | | | | | | | | | | | | |
| Estes Park | Laramie | 34 | 25.3 | 27.7 | 31.5 | 39.1 | 47.3 | 55.8 | 61.9 | 60.1 | 53.0 | 44.2 | 33.6 | 28.5 |
| Ft. Collins | Laramie | 69 | 26.2 | 28.1 | 36.3 | 45.7 | 54.6 | 63.8 | 69.3 | 68.0 | 59.4 | 48.3 | 36.1 | 28.1 |
| Ft. Morgan | Morgan | 53 | 23.4 | 28.3 | 36.6 | 47.3 | 56.5 | 66.5 | 73.0 | 71.0 | 61.6 | 49.6 | 35.9 | 25.8 |
| Greeley | Weld | 57 | 24.9 | 28.4 | 37.1 | 47.3 | 56.8 | 66.6 | 72.3 | 70.7 | 62.4 | 49.5 | 36.1 | 26.0 |
| Sterling | Logan | 40 | 24.5 | 29.3 | 37.0 | 47.8 | 56.9 | 66.8 | 73.2 | 71.1 | 62.0 | 50.4 | 36.7 | 25.7 |
| | | | | | | | | | | | | | | |
| Akron | Washington | 24 | 25.6 | 28.7 | 35.9 | 46.0 | 56.1 | 66.3 | 73.8 | 71.5 | 62.5 | 50.7 | 36.9 | 28.2 |
| Cheyenne | Laramie | 74 | 25.5 | 27.3 | 33.1 | 40.9 | 50.3 | 60.4 | 66.7 | 65.6 | 57.0 | 44.8 | 34.8 | 28.5 |
| Julesburg | Sedgwick | 39 | 26.2 | 29.0 | 37.4 | 48.5 | 57.9 | 68.0 | 75.0 | 72.8 | 63.2 | 50.7 | 37.0 | 28.0 |
| Lodgepole | Cheyenne | 48 | 26.3 | 28.1 | 36.5 | 47.2 | 56.8 | 66.6 | 73.4 | 72.3 | 62.5 | 50.9 | 37.3 | 28.1 |
| Ogallala | Keith | 26 | 25.6 | 30.5 | 38.3 | 49.3 | 58.9 | 68.9 | 76.8 | 74.3 | 64.1 | 52.0 | 37.5 | 28.5 |
| Sidney | Cheyenne | 20 | 26.0 | 29.8 | 36.8 | 46.9 | 57.3 | 66.1 | 74.6 | 72.3 | 62.5 | 51.0 | 36.6 | 28.8 |
| Sedgwick | Sedgwick | 41 | 25.4 | 29.3 | 37.0 | 47.6 | 57.3 | 68.4 | 75.7 | 73.1 | 63.0 | 50.8 | 37.4 | 26.6 |

Source: Same as Table b-2

## TABLE b-5

## HIGHEST, LOWEST AND ANNUAL MEAN TEMPERATURE AT SELECTED STATIONS IN THE SOUTH PLATTE RIVER BASIN

| Station | County | Elev. | Ann. Mean Temp. | Highest Temp. | | Lowest Temp. | |
|---|---|---|---|---|---|---|---|
| | | | | Deg. | Date | Deg. | Date |
| Boulder | Boulder | 5,385 | 52.3 | 104 | 7-11-54 | -33 | 1-17-30 |
| Cheesman | Jefferson | 6,875 | 45.9 | 99 | 6-23-54 | -41 | 1-10-62 |
| Denver (city) | Denver | 5,221 | 52.5 | 105 | 8-3-78 | -29 | 1-9-75 |
| Longmont | Boulder | 4,950 | 48.3 | 105 | 7-12-54 | -38 | 1-16-30 |
| Idaho Springs | Clear Creek | 7,569 | 45.4 | 94 | 6-23-54 | -31 | 1-10-62 |
| Estes Park | Larimer | 7,525 | 43.6 | 98 | 7-13-25 | -39 | 2-1-51 |
| Ft. Collins | Larimer | 5,004 | 47.5 | 102 | 7-11-54 | -41 | 2-1-51 |
| Ft. Morgan | Morgan | 4,321 | 48.6 | 109 | 7-2-13 | -41 | 2-1-51 |
| Sterling | Logan | 3,939 | 48.6 | 106 | 6-24-54 | -33 | 12-8-19 |
| Akron | Washington | 4,582 | 49.6 | 109 | 8-2-38 | -29 | 2-1-51 |
| Greeley | Weld | 4,648 | 48.1 | 107 | 7-24-36 | -45 | 2-12-99 |
| Julesburg | Sedgwick | 3,469 | 50.1 | 109 | 8-25-55 | -38 | 12-9-19 |
| Parker | Elbert | 6,300 | 48.1 | 107 | 6-15-46 | -35 | 2-8-36 |
| Cheyenne | Laramie | - | 44.6 | 100 | - | -38 | - |
| Lodgepole | Cheyenne | - | 48.8 | 106 | - | -21 | - |
| Ogallala | Keith | - | 50.4 | 105 | - | -20 | - |
| Sidney | Cheyenne | - | 49.1 | 109 | - | -23 | - |

Source: Same as Table b-1

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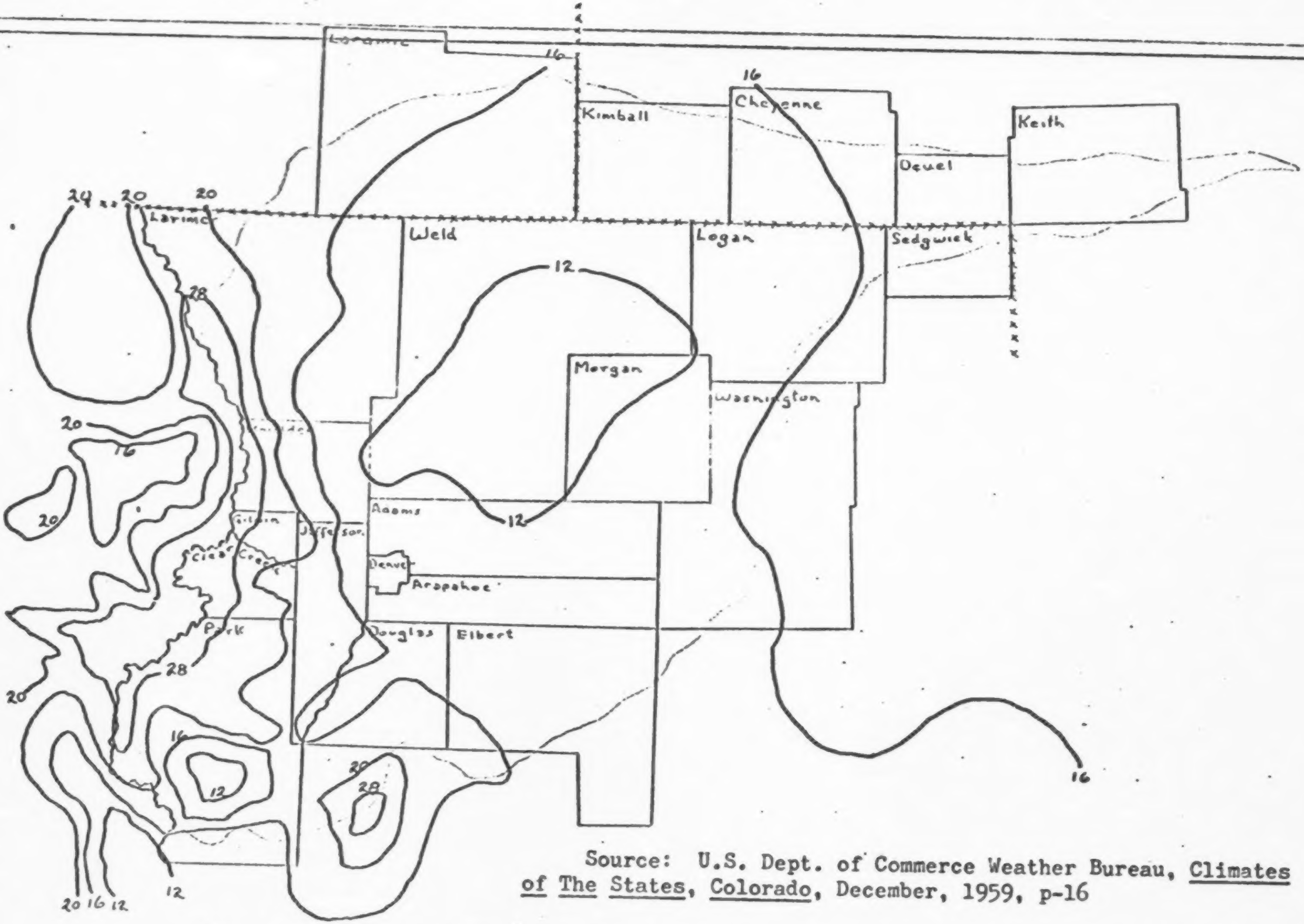
# TABLE b-6

## LENGTH OF GROWING SEASON AT SELECTED STATIONS IN THE SOUTH PLATTE RIVER BASIN

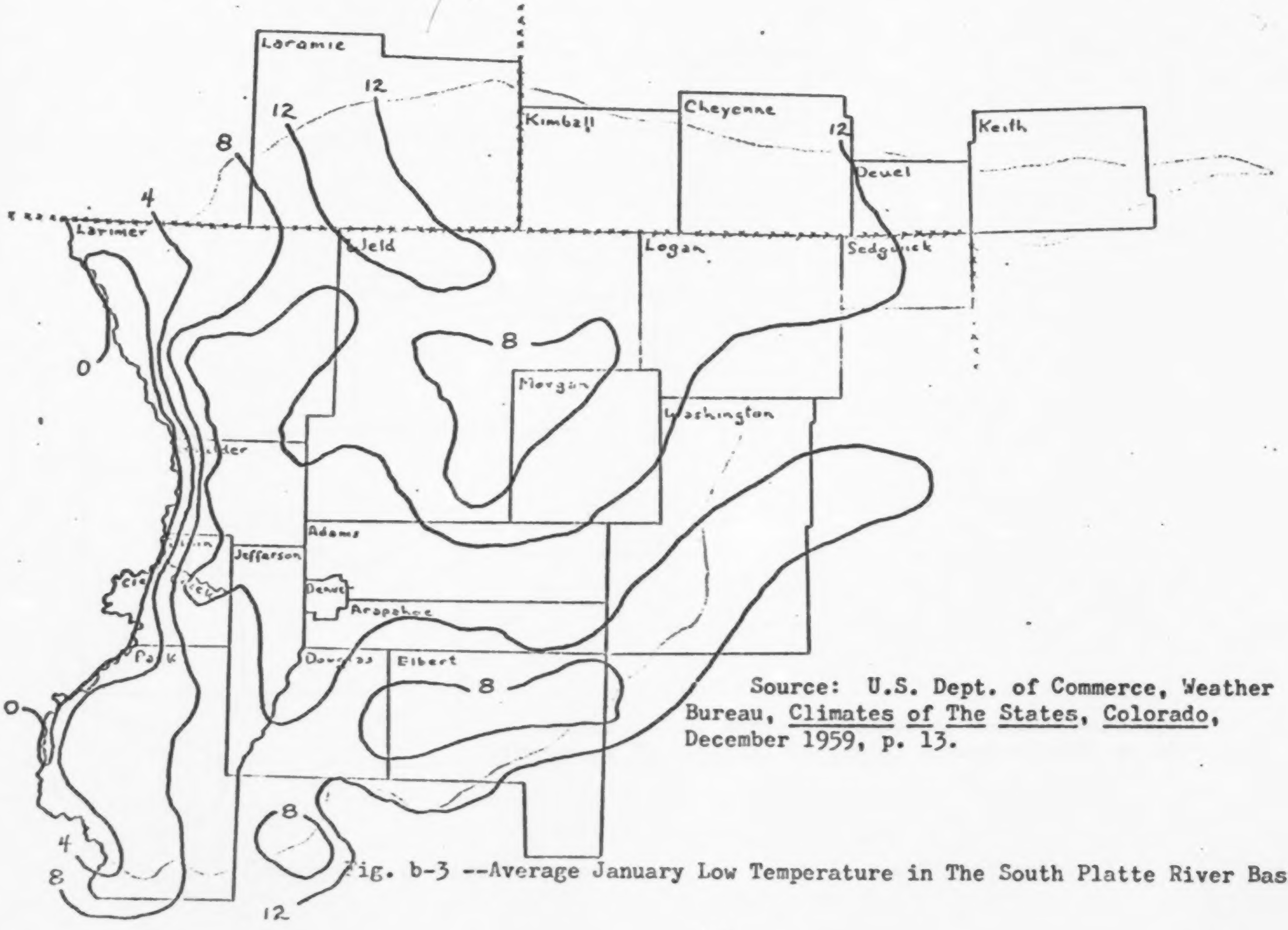
| | | Killing Frost Temp. of 32°F | | Killing Frost Temp. of 32°F | | |
|---|---|---|---|---|---|---|
| Station | County | Avg. Date in Spring | Avg. Date in Fall | Latest Date in Spring | Earliest Date in Fall | Average Length Growing Season (days) |
| Boulder | Boulder | May 9 | Oct. 6 | June 13 | Sept. 9 | 150 |
| Byers | Arapahoe | May 14 | Sept. 29 | June 6 | Sept. 13 | 139 |
| Denver (city) | Denver | May 2 | Oct. 14 | June 6 | Sept. 12 | 165 |
| Longmont | Boulder | May 10 | Sept. 29 | June 16 | Sept. 8 | 142 |
| Estes Park | Larimer | June 8 | Sept. 4 | June 30 | Aug. 14 | 88 |
| Ft. Collins | Larimer | May 8 | Sept. 29 | June 13 | Sept. 6 | 144 |
| Ft. Morgan | Morgan | May 8 | Oct. 3 | June 30 | Aug. 25 | 148 |
| Greeley | Weld | May 10 | Sept. 29 | June 13 | Sept. 9 | 142 |
| Grover | Weld | May 18 | Sept. 27 | June 30 | Aug. 29 | 132 |
| Sterling | Logan | May 10 | Sept. 27 | June 12 | Sept. 1 | 140 |
| Akron | Washington | May 11 | Oct. 4 | June 13 | Sept. 9 | 146 |
| Julesburg | Sedgwick | May 9 | Oct. 1 | June 2 | Sept. 9 | 145 |
| Sedgwick | Sedgwick | May 4 | Oct. 2 | May 27 | Sept. 9 | 150 |

Source: Same as Table b-1


Laramie
Kimball
Cheyenne
Keith
Deuel
Larimer
Weld
Logan
Sedgwick
Morgan
Washington
Boulder
Gilpin
Jefferson
Clear Creek
Adams
Denver
Arapahoe
Park
Douglas
Elbert
24
20
20
16
16
12
12
28
20
16
20
28
20
16
12
20
28
16
20 16 12
12

Source: U.S. Dept. of Commerce Weather Bureau, Climates of The States, Colorado, December, 1959, p-16

Fig. b-2 --Average Annual Rainfall in The South Platte River Basin (inches)


Laramie
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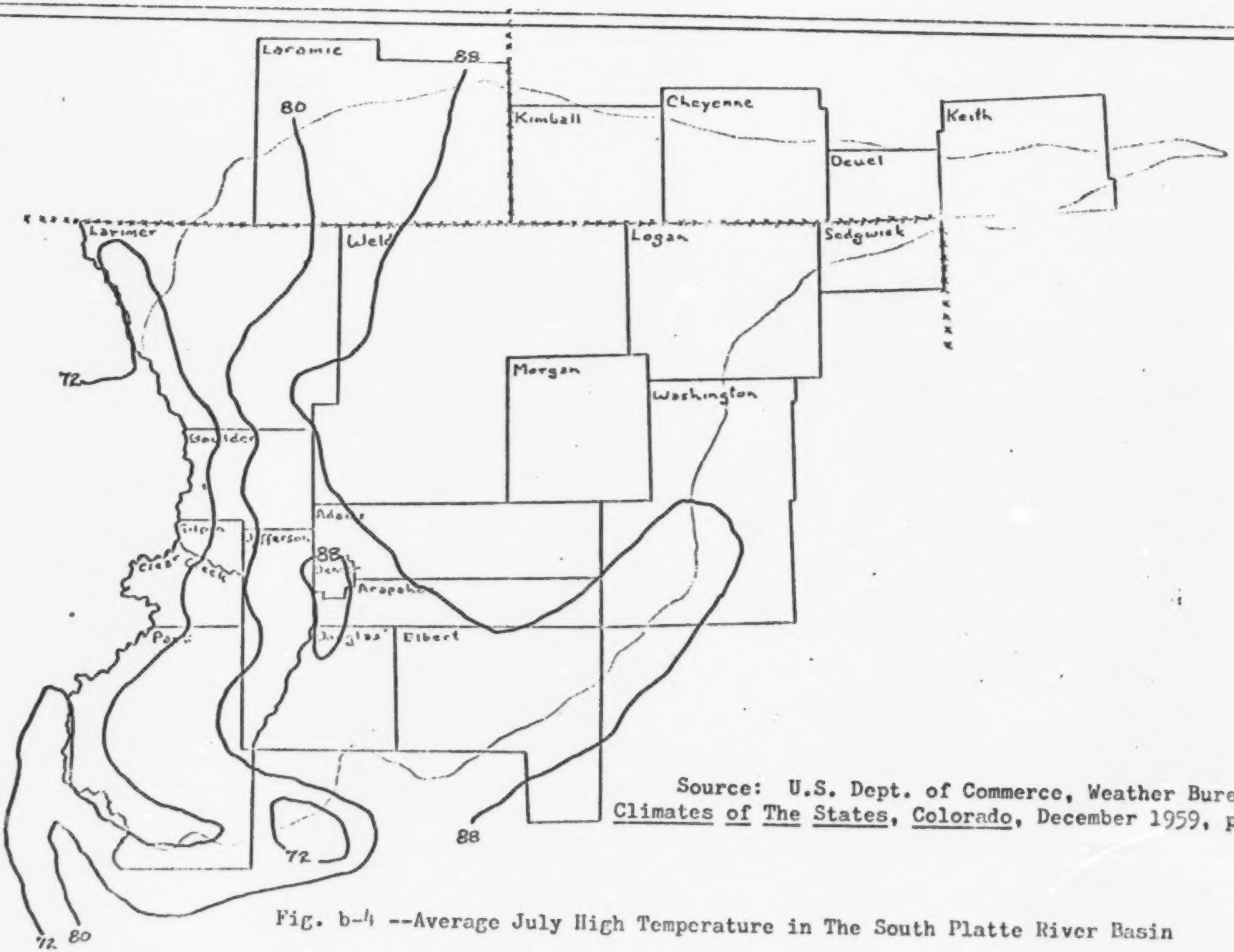
Keith
Deuel
Larimer
Weld
Logan
Sedgwick
Morgan
Washington
Adams
Jefferson
Denver
Arapahoe
Douglas
Elbert
Park
0
4
8
12

Source: U.S. Dept. of Commerce, Weather Bureau, Climates of The States, Colorado, December 1959, p. 13.

Fig. b-3 --Average January Low Temperature in The South Platte River Basin.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Kimball
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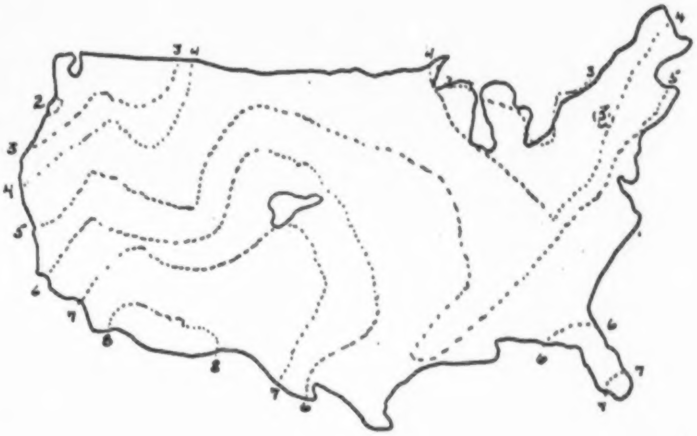
Deuel
Keith
Larimer
Weld
Logan
Sedgwick
Morgan
Washington
Boulder
Adams
Gilpin
Jefferson
Clear Creek
Denver
Arapahoe
Park
Douglas
Elbert
88
80
72
88
88
72
72
80

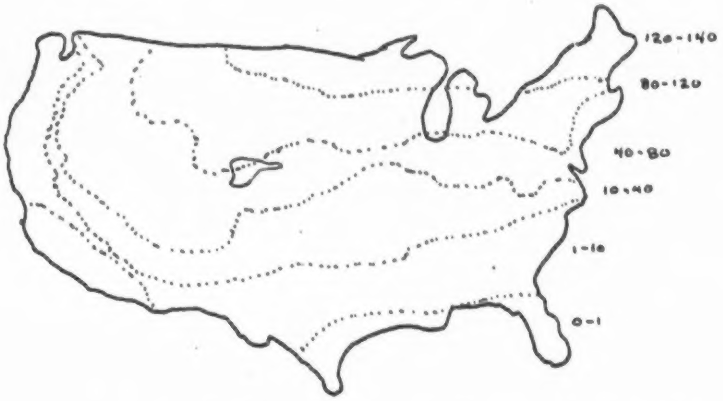
Source: U.S. Dept. of Commerce, Weather Bureau, Climates of The States, Colorado, December 1959, p. 14

Fig. b-4 --Average July High Temperature in The South Platte River Basin



3
4
2
3
4
5
6
7
8
8
7
6
4
3
3
4
5
6
6
7
7
7

Average Hours of Sunshine Per Winter Day



120-140
80-120
40-80
10-40
1-10
0-1

Average Number of Days With Winter Snow Cover

Fig. b-5 --Average Hours of Sunshine Per Winter Day,
Average Number of Days With Winter Snow Cover

## 2. Land resources

There is a total of 13,987,840[1] acres of land in the South Platte River Basin (includes total counties, not just that portion within the watershed). This land is approximately 75 percent privately owned. Seventy-one percent is in farmland. More than half this farmland is grazing land, and a third is dry land farmed. Less than a tenth is irrigated, though this amount varies from year to year. Of the 25 percent that is publicly administered, one fifth, mostly school lands, is administered by the State government and one twentieth by county and municipal governments. The Federal Government administers 17 percent of the land surface of the basin, most of which (12.9 percent) is national forest land. The balance is Rocky Mountain National Park (165,225 acres), military reservations (91,887 acres), and Bureau of Land Management grazing lands. Since the major element of government managed land is national forests it would be expected that the Mountain Subregion and the other two subregions which have portions of their area in the mountains would have a larger share of public lands. A glance at the Table a-7 and Figure a-7 shows that this is the case. The land use chart of the Metropolitan Region looks more rural than would perhaps be expected. This is because Standard Metropolitan Statistical Areas include the total counties in which the urban concentration is located. Of the five counties included here, only Denver County is predominantly urban in terms of land use. Figures b-6 and b-7 utilize the data of Table b-7 to give a graphic representation of land ownership and use.

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[1] Data in this section (which is derived from tax reports) is for the Colorado portion of the basin only since comparable data for Wyoming and Nebraska could not be obtained. The Nebraska and Wyoming portion of the basin are 20% of the total basin. Inclusion of these counties would increase the proportion of dry farmland and private ownership.

## TABLE 6-7

## LAND OWNERSHIP AND USE IN THE SOUTH PLATTE RIVER BASIN, SUBREGIONS AND COUNTIES, 1960-1964

| Area | Area in Acres | | Land in Private Ownership on the Tax Roles as of April 1, 1964 | | | |
|---|---|---|---|---|---|---|
| | | | Farm Land | | | |
| | Water | Total | Irrig. Farm Land | Hay, Veg. & Waste Land | Dry Farm Land | Grazing Land |
| Metropolitan | | | | | | |
| Adams | 3,264 | 797,118 | 55,921 | 25,361 | 501,465 | 129,299 |
| Arapahoe | 576 | 514,255 | 2,210 | 4,910 | 159,610 | 208,915 |
| Boulder | 6,208 | 485,120 | 71,343 | 28,146 | 25,731 | 118,888 |
| Denver | 3,752 | 57,893 | - | - | - | - |
| Jefferson | 3,520 | 505,294 | 17,449 | - | 31,161 | 194,851 |
| | 16,320 | 2,359,680 | 146,923 | 58,417 | 717,967 | 651,953 |
| Mountain | | | | | | |
| Clear Creek | 448 | 252,800 | - | 201 | - | 17,503 |
| Gilpin | 384 | 95,360 | - | 700 | - | 31,300 |
| Park | 9,216 | 1,393,920 | - | 36,327 | 13,512 | 490,816 |
| | 10,048 | 1,742,080 | - | 37,228 | 13,512 | 539,619 |
| Irrigated Plains | | | | | | |
| Larimer | 19,008 | 1,639,600 | 99,108 | 36,161 | 56,091 | 574,766 |
| Logan | 17,088 | 1,183,360 | 80,138 | 30,079 | 406,556 | 487,414 |
| Morgan | 14,336 | 832,000 | 123,747 | 22,036 | 171,844 | 441,142 |
| Weld | 20,160 | 2,581,120 | 387,520 | 35,248 | 559,559 | 1,111,133 |
| | 70,592 | 6,236,080 | 690,513 | 123,524 | 1,194,050 | 2,614,455 |
| Dry Plains[a] | | | | | | |
| Douglas | 576 | 540,160 | 5,857 | 22,137 | 37,718 | 289,245 |
| Elbert | 64 | 1,192,960 | - | 9,763 | 212,078 | 870,922 |
| Sedgwick | 6,464 | 354,560 | 21,042 | 9,217 | 182,008 | 98,760 |
| Washington | 2,816 | 1,619,200 | 6,755 | - | 777,449 | 707,659 |
| | 9,920 | 3,706,880 | 33,654 | 41,117 | 1,209,253 | 1,966,586 |
| South Platte River Basin | 106,880 | 14,094,720 | 871,090 | 260,286 | 3,134,782 | 5,772,613 |

[a] Colorado Counties Only

Source: Adapted from *Colorado Yearbook 1962-1964*, Table Facing p. 498

TABLE b-7 Continued

| | Land in Private Ownership on the Tax Roles as of April 1, 1964 | | | State Owned Land | |
|---|---|---|---|---|---|
| | Mineral Land and Claims | | Town and City Lots | | |
| Area | Coal & Oil Reserves | Quarry Land & Mineral Claims | | School Land 19 | Total State Owned Land |
| Metropolitan | | | | | |
| Adams | - | - | 21,157 | 28,010 | 28,010 |
| Arapahoe | - | - | 20,703 | 13,592 | 13,592 |
| Boulder | 45,075 | - | 17,885 | 2,933 | 3,013 |
| Denver | - | - | 56,028 | 35 | 35 |
| Jefferson | 67,298 | 908 | 30,700 | 4,056 | 6,453 |
| | 112,373 | 908 | 146,473 | 48,626 | 51,103 |
| Mountain | | | | | |
| Clear Creek | - | 22,785 | 1,246 | 2,586 | 2,546 |
| Gilpin | - | 15,251 | 1,437 | 950 | 950 |
| Park | 13,819 | 28,151 | 585 | 31,524 | 83,988 |
| | 13,819 | 66,187 | 3,316 | 35,060 | 87,524 |
| Irrigated Plains | | | | | |
| Larimer | 281,970 | 868 | 9,680 | 47,857 | 53,099 |
| Logan | - | - | 1,975 | 133,084 | 135,709 |
| Morgan | - | - | 2,047 | 54,161 | 54,161 |
| Weld | 1,240 | - | 10,549 | 174,735 | 177,055 |
| | 283,210 | 868 | 24,249 | 409,837 | 420,024 |
| Dry Plains[a] | | | | | |
| Douglas | 62,097 | 307 | 17,918 | 8,016 | 8,016 |
| Elbert | 507,202 | - | 1,981 | 82,141 | 82,141 |
| Sedgwick | - | - | 975 | 24,886 | 24,886 |
| Washington | - | - | 840 | 106,388 | 108,059 |
| | 569,299 | 307 | 21,714 | 221,431 | 223,102 |
| South Platte River Basin | 978,701 | 68,270 | 195,754 | 714,954 | 781,753 |

[a] Colorado Counties Only

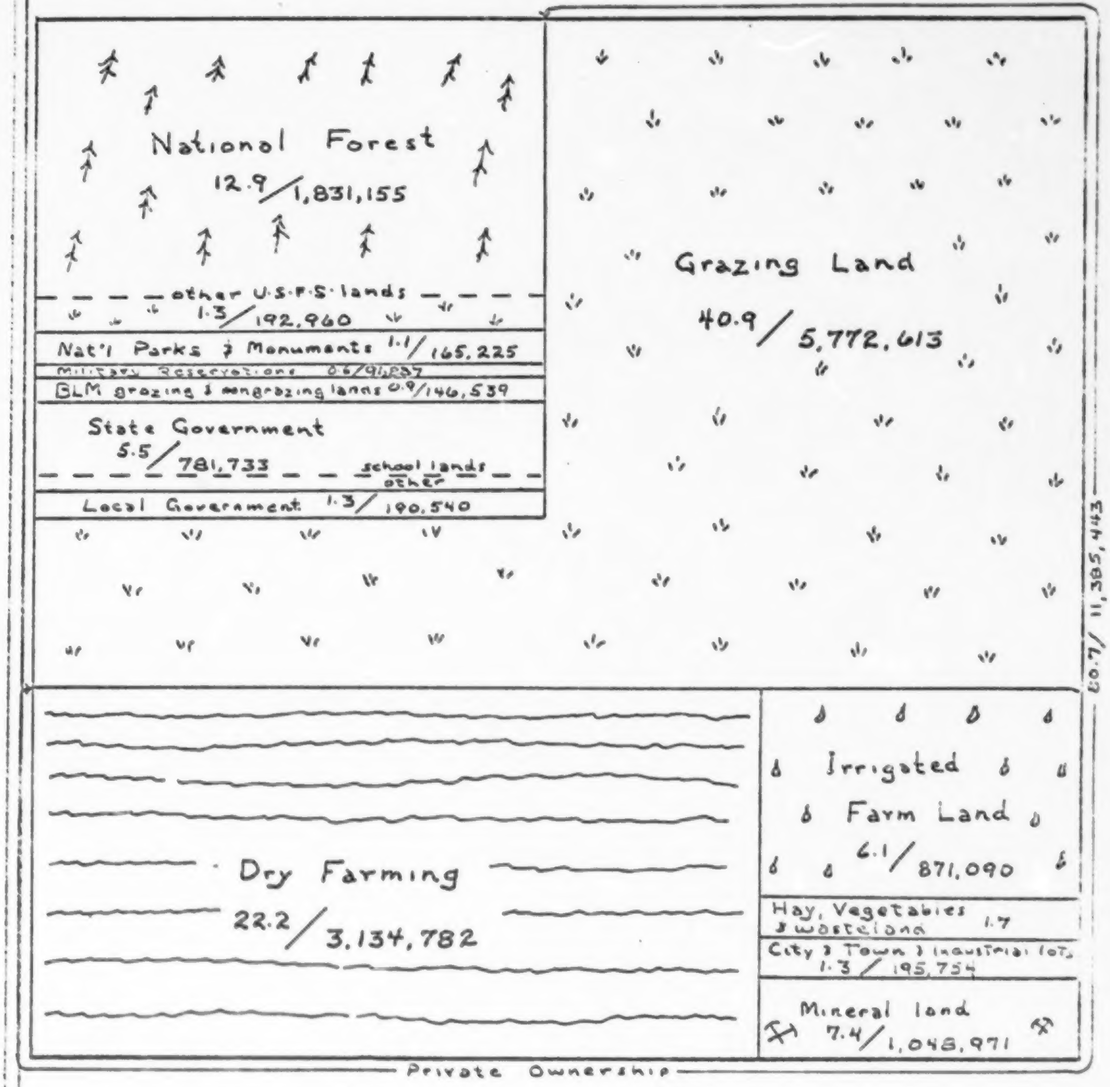
Source: Adapted from *Colorado Yearbook 1962-1964*, Table Facing p. 498

TABLE 6-7 Continued

| | Local Govern. Land | | United States Government Land | | | |
|---|---|---|---|---|---|---|
| Area | Municipal Lands 1960 | County Lands 1960 | National Parks & Monuments 1963 | National Forest 1963 | Military Resvns. Naval Res. 1963 | Bureau of Land Mgmt. |
| Metropolitan | | | | | | |
| Adams | 1,921 | 553 | - | - | 19,832 | - |
| Arapahoe | 41,234 | 43 | - | - | 67,721 | - |
| Boulder | 14,070 | 124 | 25,010 | 137,095 | 13 | 5,552 |
| Denver | NA | NA | - | - | 2,077 | - |
| Jefferson | 17,382 | 186 | - | 97,865 | 1,108 | 3,619 |
| | 74,607 | 906 | 25,010 | 234,960 | 90,751 | 9,171 |
| Mountain | | | | | | |
| Clear Creek | 7,266 | NA | - | 166,934 | - | 23,005 |
| Gilpin | 850 | NA | - | 40,221 | - | 5,934 |
| Park | 17,637 | 329 | - | 640,490 | - | 75,580 |
| | 25,753 | 329 | - | 847,645 | - | 104,519 |
| Irrigated Plains | | | | | | |
| Larimer | 2,453 | 151 | 140,215 | 609,922 | 183 | 26,986 |
| Logan | 1,210 | 768 | - | - | - | 1,276 |
| Morgan | NA | NA | - | - | - | 674 |
| Weld | 96 | 49,205 | - | 192,960 | 648 | 2,730 |
| | 3,759 | 50,124 | 140,215 | 802,882 | 831 | 31,666 |
| Dry Plains[a] | | | | | | |
| Douglas | 5,770 | 33 | - | 138,628 | - | 44 |
| Elbert | 520 | 40 | - | - | 305 | 30 |
| Sedgwick | 648 | 56 | - | - | - | 64 |
| Washington | NA | 27,995 | - | - | - | 995 |
| | 6,938 | 28,124 | - | 138,628 | 305 | 1,133 |
| South Platte River Basin | 111,057 | 79,483 | 165,225 | 2,024,115 | 91,887 | 146,539 |

[a] Colorado Counties Only

Source: Adapted from Colorado Yearbook 1962-1964, Table Facing p. 498

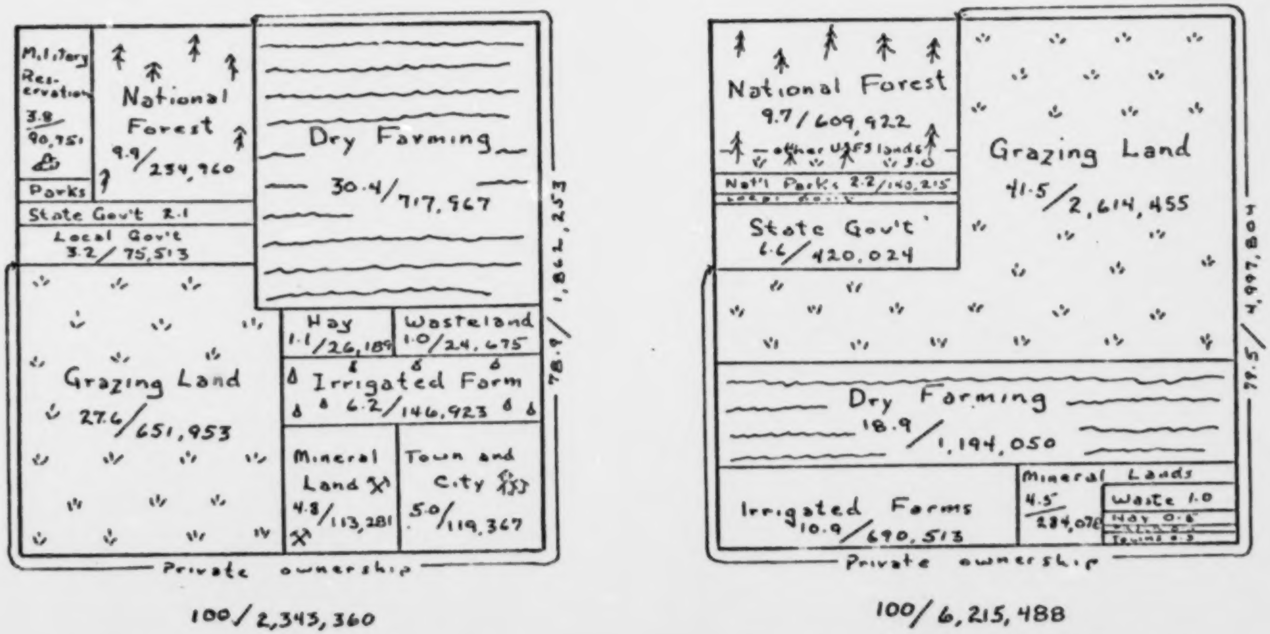


Percent of Total / Number of Acres = 100/13,987,840

[a]Colorado Counties Only

Source: Table b-7

Fig. b-6 --Land Ownership and Use in The South Platte River Basin[a]

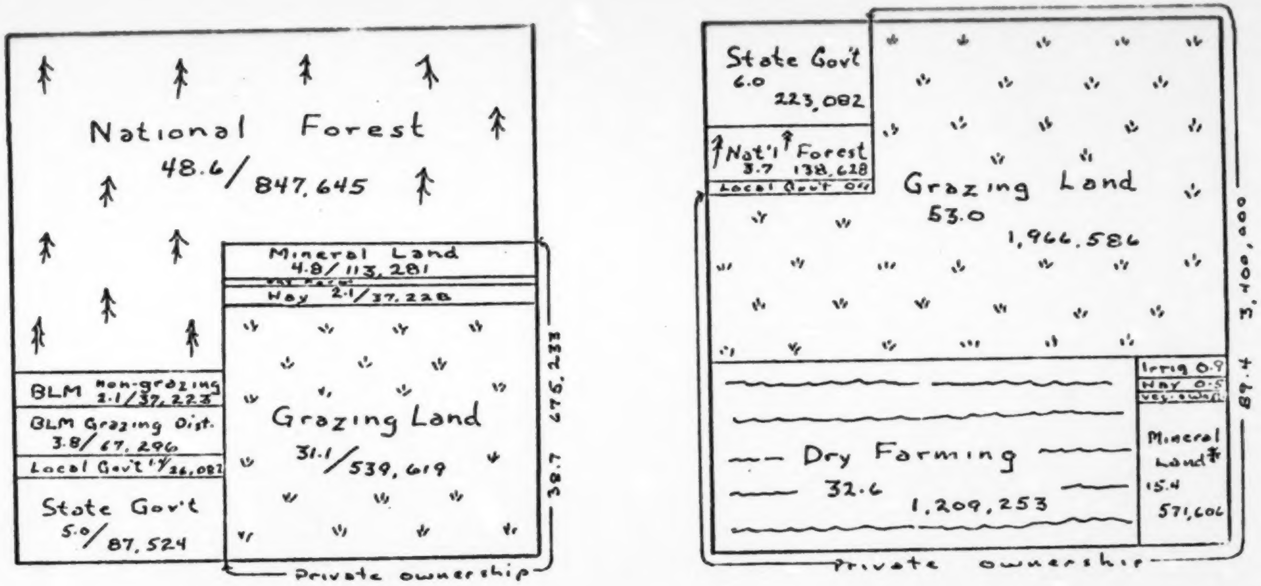

Military Reservation
3.8/90,751
Parks
National Forest
9.9/234,960
State Gov't 2.1
Local Gov't
3.2/75,513
Dry Farming
30.4/717,967
Grazing Land
27.6/651,953
Hay
1.1/26,189
Wasteland
1.0/24,675
Irrigated Farm
6.2/146,923
Mineral Land
4.8/113,281
Town and City
5.0/119,367
78.9/1,862,253
Private ownership
100/2,343,360
National Forest
9.7/609,922
other USFS lands 3.0
Nat'l Parks 2.2/140,215
State Gov't
6.6/420,024
Grazing Land
41.5/2,614,455
Dry Farming
18.9/1,194,050
Irrigated Farms
10.9/690,513
Mineral Lands
4.5/284,078
Waste 1.0
Hay 0.6
79.5/4,997,804
Private ownership
100/6,215,488

Metropolitan Region

Irrigated Plains Region

Source: Table b-7

Fig. b-7 --Land Ownership and Use, Subregions of South Platte Basin
Percent of Total/Number of Acres


National Forest
48.6/847,645
Mineral Land
4.8/113,281
Hay 2.1/37,228
BLM Non-grazing 2.1/37,223
BLM Grazing Dist. 3.8/67,296
Local Gov't 1.5/26,082
State Gov't 5.0/87,524
Grazing Land
31.1/539,619
38.7 676,233
Private ownership
State Gov't
6.0
223,082
Nat'l Forest
3.7 138,628
Local Gov't 0.1
Grazing Land
53.0
1,966,586
Irrig 0.9
Hay 0.5
Dry Farming
32.6
1,209,253
Mineral Land*
15.4
571,606
89.4 3,400,000
Private ownership

100/1,732,032

Mountain Region

100/3,696,960

Dry Plains Region

*County assessors assess both mineral lands and surface land leading to some overstatement of acreage. Since mineral lands shown here are mostly coal reserves, area is not in proportion.

Source: Table b-7

Fig. b-7 --Land Ownership and Use, Subregions of South Platte Basin
Percent of Total/Number of Acres
(Continued)

3. Water Resources

The water resources of the South Platte River Basin which have been so important in its economic development, include the surface flows of the river and its tributaries, as augmented by transmountain diversions and the amount of water available from the ground-water reservoirs.

The surface water available for use is approximately 1.2 million acre-feet of native flow annually plus about 0.3 million acre-feet of imported water annually. The amount of water used annually is approximately .22 million acre-feet of surface water (plus .03 million acre-feet of groundwater) for municipal use; .05 million acre-feet by industry not connected to municipal systems; 2.1 million acre-feet of surface water, including reuse, used by agriculture which is by far the largest water user in the basin. The total amount of water supplied from all sources for all uses in the basin has been estimated[1] as 3.7 million acre-feet annually which includes reused water (most municipal use is not consumptive, but returns the water to the stream course available for use again further downstream. Agriculture is a more consuming use of water, but even here as much as 30-40 percent of the water used may return to the ground-water reservoir or the stream for eventual reuse).

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[1] Public Health Service, U.S. Department of Health, Education and Welfare, Proceedings of the Conference in the Matter of Pollution of the South Platte River Basin, October 29, 1963, p. 16.

As the foregoing indicates, the surface water resource of the South Platte River Basin is highly utilized. The Bureau of Reclamation states: "Basically ...the present surface water supplies of the South Platte River Basin are already developed almost to their full potential."[2] Data for the 1930-49 period show an average annual water supply of 1,440,310 acre-feet and average annual depletions of 1,137,400 acre-feet or 79 percent of the total, leaving an outflow from the basin of only 302,900 acre-feet (and the water supply included an average of 196,500 acre-feet of imported water each year). The surface water supply of the basin is in fact over appropriated (i.e., more is claimed by the various users than is available). This situation developed quite early in the South Platte Basin. By 1900 irrigated agricultural development had outgrown the native surface water supply. Water users have increasingly turned to water supplies from outside the basin. The first transmountain water diversion system was completed in 1893 (the Skyline Ditch importing water from the Laramie River of the North Platte Watershed to the Cache la Poudre River). There are currently fourteen water systems bringing water across the mountains into the South Platte River Basin, seven from the North Platte River Basin (mostly from the Laramie River) and seven from the Colorado River Basin. The following table gives an idea of the magnitude of these transmountain diversions.

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[2] Bureau of Reclamation, Department of the Interior, Report on the South Platte River Basin, (published for interagency use, [illegible] 1959), p. 2.

Table b-8

Transmountain Diversions
(acre-feet)

| From | 1943 | 1944 | 1961 | 1962 | 1963 | 1964 |
|---|---|---|---|---|---|---|
| Colorado R. Basin, | 54,905 | 37,291 | 273,000 | 290,200 | 346,600 | 346,800 |
| Colorado-Big Thompson | | | 208,700 | 204,700 | 285,400 | 318,400 |
| North Platte R. Basin | 20,765 | 21,858 | 12,980 | 18,880 | 20,320 | 21,880 |
| | 76,670 | 59,149 | 285,980 | 309,080 | 366,920 | 368,680 |

Source: U.S. Geological Survey, Surface Water Records of Colorado, and Colorado Department of Water Resources, Records of the State Engineer, Various years.

The Colorado-Big Thompson Project of the Bureau of Reclamation which began delivering water in 1947 is by far the largest of the transmountain diversion systems, bringing in 86 percent of all water imported in 1964. The second largest system is the Moffat Tunnel system through which the City of Denver began importing water in 1936. In 1964, imported water comprised about 20 percent of the total surface water supply in the basin. This transportation of water from the western slope to the eastern slope has not been without conflict. Two-thirds of the precipitation that falls on Colorado falls on the western slope (Colorado River Basin). Yet the major agricultural and now industrial development with its attendant population growth has been on the eastern slope where dependable flows are over appropriated. Most uncommitted water is in the Colorado River Basin and it seems reasonable to eastern slope people to utilize this water where it is needed rather than let it flow out of the state unused. However, people in the Colorado River Basin are fearful that exporting water to the developing eastern slope may jeopardize future development of the western slope.

With overappropriation of surface waters, it is not surprising that greater and greater use is being made of the groundwater supply to supplement surface water. Most of the available groundwater is in the valley fill aquifer (the unconsolidated material that has piled up on the floor of the valley like corn flakes in a bowl) rather than in deeper strata. It has been estimated that there are 25,000,000 acre-feet of groundwater in storage in the alluvium of all the South Platte River and its tributaries.[3] The depth of this water from the surface varies from less than a foot beneath the flood plain to as much as 80 feet beneath the terraces. Irrigation wells were dug to utilize this water as early as 1885. A large development in wells did not take place, however, until a coincidence of need in the form of the drought of the 1930's and an improved supply of power in the form of better engines and greater availability and cheaper cost of electricity during the same period. One section of the river valley (between Denver and Kersey) reportedly had fewer than 100 large capacity irrigation wells in 1930, 700 wells by 1940 and 1,700 wells in 1958. The exact amount of groundwater utilized in the basin each year is difficult to quantify but unquestionably varies from year to year depending upon other water available. One source[4] states that in 1956 (a dry year) 5,000 wells pumped 1,000,000 acre-feet to irrigate 550,000 acres. An inventory of wells registered with the State of Colorado Water Conservation Board showed 20,974 wells in the South Platte River Basin in 1964 with a capacity yield of 5,934,886 gallons per minute (9,555,166 acre-feet per year)[5]. Yields per well vary from a few gallons per minute to 2,000 gallons per minute. The figures of Table b-9 indicate a preponderant usage of groundwater for agriculture - more than 90 percent of rated yield - and also a concentration of usage in the Irrigated Plains Subregion-almost 80 percent. There is recent trend toward increasing usage of groundwater for irrigation in the Dry Plains Subregion.[6] The large number of industrial wells in the Irrigated Plains Subregion largely reflects the size of the water flooding operation in the oil fields of the area (6,074 acre-feet in 1963).

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[3] Ibid., p. 27 and p. 73.

[4] Ibid., p. 27.

Only about twenty-three cities and towns in the basin derive their water supply from surface sources. This is, however, the major part of the population of the basin. All of these communities are close to the

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[5] These numbers cannot be taken too literally. They tend to understate the number of wells since not all wells are registered with the state, and overstate the yield since well owners give the most optimistic yield possible in case this should become the basis for establishing future rights to groundwater.

[6] Robert Markey, Groundwater Geologist, South Platte River Basin Project, Federal Water Pollution Control Administration, feels that this water is being drawn from a non-replenishable aquifer and will not last beyond 25 years.

## TABLE b-9

### NUMBER AND YIELD OF GROUND-WATER WELLS BY USE AND TOTAL (YIELD IS IN GALLONS PER MINUTE)

| Area | Irrigation | | Stock | | Domestic | | Commercial | |
|---|---|---|---|---|---|---|---|---|
| | No. | Yield | No. | Yield | No. | Yield | No. | Yield |
| Metropolitan | 1,122 | 593,983 | 176 | 3,163 | 4,751 | 63,288 | 280 | 28,417 |
| Mountain | 1 | 1,200 | 17 | 670 | 472 | 3,039 | 20 | 314 |
| Irrigated Plains | 4,831 | 4,501,106 | 612 | 14,240 | 2,001 | 22,151 | 65 | 10,638 |
| Dry Plains | 533 | 442,492 | 4,460 | 5,366 | 642 | 9,484 | 20 | 4,678 |
| South Platte River Basin | 6,487 | 5,538,781 | 5,265 | 23,439 | 7,866 | 97,962 | 385 | 44,047 |

### TABLE b-9 Continued

| Area | Municipal | | Industrial | | Joint and Other Use | | Total | |
|---|---|---|---|---|---|---|---|---|
| | No. | Yield | No. | Yield | No. | Yield | No. | Yield |
| Metropolitan | 200 | 68,765 | 146 | 34,218 | 61 | 2,997 | 6,736 | 794,831 |
| Mountain | 3 | 6,024 | 1 | 38 | 4 | 26 | 518 | 11,311 |
| Irrigated Plains | 81 | 48,570 | 100 | 48,560 | 187 | 3,190 | 7,877 | 4,648,455 |
| Dry Plains | 31 | 4,286 | 17 | 9,399 | 140 | 4,584 | 5,843 | 480,289 |
| South Platte River Basin | 315 | 127,645 | 264 | 92,215 | 392 | 10,797 | 20,974 | 5,934,886 |

Source: Colorado Water Conservation Board Basic Data Release No. 17, Records of Wells in Colorado by James A. McConaghy and George W. Colburn, U.S. Geological Survey and Colorado Water Conservation Board, 1964.

mountain front and bring their water in from quite high up in the stream courses. Almost all the communities on the plains rely upon wells and groundwater for municipal water supplies. Several subdivisions in the metropolitan area do likewise. In general because groundwater in the basin is hard to very hard, it is of poor quality for domestic use. The United States Geological Survey states that groundwater "in most of the area is of suitable quality for irrigation except that it has a high or very high salinity hazard; in some places the leaching requirements of the water are so high that special farming methods for salinity control are needed to prevent accumulation of large amounts of salts in the root zone of the soil."[7] In some cases this requires alternate application of good quality surface water with poorer quality groundwater to prevent concentration of salts in the soil. Specific conductance (a measure of the amount of dissolved minerals in water) ranges from 500 to 13,000, but in most of the main river valley varies from 1,000 to 1,800. This can also be stated in terms of total dissolved solids in the water as being 600-1,200 parts per million. The amount of dissolved solids in the water increases down gradient of the river basin.

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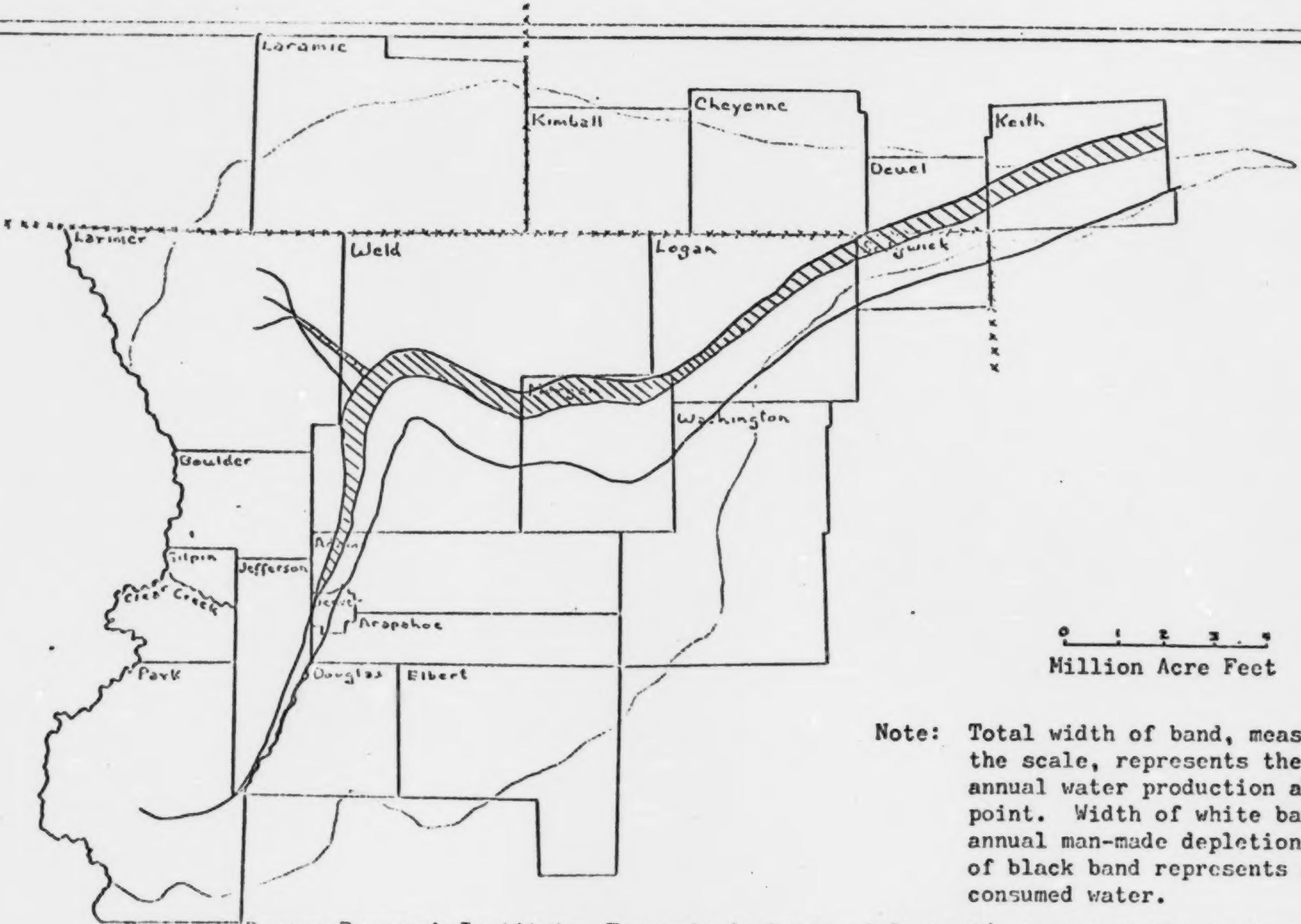
[7] Geological Survey Water Supply Paper 1658, Ground Water Resources of the South Platte River Basin in Western Adams and Southwestern Weld Counties, Colorado, (Washington, D.C., Government Printing Office, 1964), p. 100.

The surface water of the basin also varies in quality. It is heavily polluted by untreated Denver sewage - a situation which will be improved with completion in 1967 of a secondary sewage treatment plant to handle Metropolitan Denver's sewage. Sugar beet processing plants provide the biggest challenge in industrial pollution. The South Platte is a gaining stream (i.e., water flows from the ground-water reservoir into the surface stream) for most of its length. Hence water used to irrigate crops that flows into the ground reservoir will flow back into the river at a lower point carrying with it salts leached out of the soil, adding significantly to the amount of total dissolved solids in the river as it progresses downstream.

Further development of the groundwater resource is very likely. Present pumpage has not caused an apparent depletion in the level of the water table (with local exceptions.) Fluctuation in the water table over a period of time has been two to thirteen feet. Expansion of available surface water is more questionable. More water could perhaps be imported and other water generation possibilities such as cloud seeding may have some importance in the future. Development of recycling and reuse techniques will stretch municipal and industrial supplies and more efficient agricultural use (lining canals, etc.) may effectively increase the water supply. Another means of increasing the productive use of water is a transferral use, i.e., municipal and industrial users buying rights to water that has formerly been used for agriculture.


Laramie
Kimball
Cheyenne
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Keith
Larimer
Weld
Logan
Washington
Boulder
Gilpin
Clear Creek
Jefferson
Arapahoe
Douglas
Elbert
Park
0 1 2 3 4
Million Acre Feet

Note: Total width of band, measured by the scale, represents the total annual water production above that point. Width of white band represents annual man-made depletions, and width of black band represents annual unconsumed water.

Source: Denver Research Institute, Economic Analysis of State Senatorial Districts in Colo., p.II-51

Fig. b-8 --Water Production and Consumption of The South Platte River, 1963

## 4. Mineral Resources

The mineral resources of the South Platte River Basin are extensive and of great variety. Location of the metallic minerals is concentrated in the mountain portion of the region (the Mountain Subregion and those counties of the other three subregions which border the mountains) and the early growth and more recent decline of this portion of the basin is closely associated with the development and market fortunes of these minerals. Mineral fuels, on the other hand, occur more in the plains portions of the basin where they have been an important factor in the economy in the past two decades. Non-metallic minerals are more evenly distributed among all the subregions of the basin.

Of the metallic minerals, gold, and silver, have accounted for the major portion of cumulative value produced and together with copper, zinc, lead, tungsten, and uranium are the principal metals produced in the South Platte River Basin. (See the later section on mining activity for quantities and values of minerals, produced). These metals have been mined from lode deposits in the Front Range mineral belt as well as from placer operations in the gravel deposits along the stream beds. Today gold and silver are produced almost entirely from mines whose principal products are copper, copper-lead-zinc and lead-zinc ores. Two operators are obtaining gold and silver from placer operations in the Mountain Subregion and nine firms in the Metropolitan Subregion are doing so as a by-product of sand and gravel washing operations.

Other metals that have been produced in the basin at sometime in varying amounts include:

Beryllium, which is mined in Park County and processed nearby at Lake George and Arvada and Loveland.

Cadmium, Indium, and Thallium which are derived from flue dust and other by-product materials at a milling operation in Denver.

Iron ore is recovered as a by-product in the manufacture of sulfuric acid from Pyrite in a plant in Denver and is used in the manufacture of cement and for pig iron.

Molybdenum was mined in Clear Creek on a limited basis during World Wars I and II and is now undergoing development work for possible future production. A moderate sized production of high grade ore was begun in Gilpin County in 1964.

Tungsten mined in Boulder County has amounted to about 20 percent of the total tungsten production of the United States. Activity has lagged except during war years or years of guaranteed prices.

Uranium ore is being produced by nine operators in the basin, but they are not major producers of ore.

Other metals occur in the basin but have not been exploited to any degree. These include: Cobalt, Manganese, Nickel, Tin, Vanadium, and Barium.

The non-metallic minerals although they have had a less dramatic impact upon the pattern of settlement of the basin than the glamour metals -- gold and silver, are produced in much larger quantities and make a more significant contribution to today's economy than do the metallic minerals.

Cement is produced from a large outcropping of cement rock in Larimer County. Most of the output is used in Colorado, but shipments are made to Kansas, Nebraska, Nevada, New Mexico, Ohio, Oklahoma, Tennessee, Utah, and Wyoming.

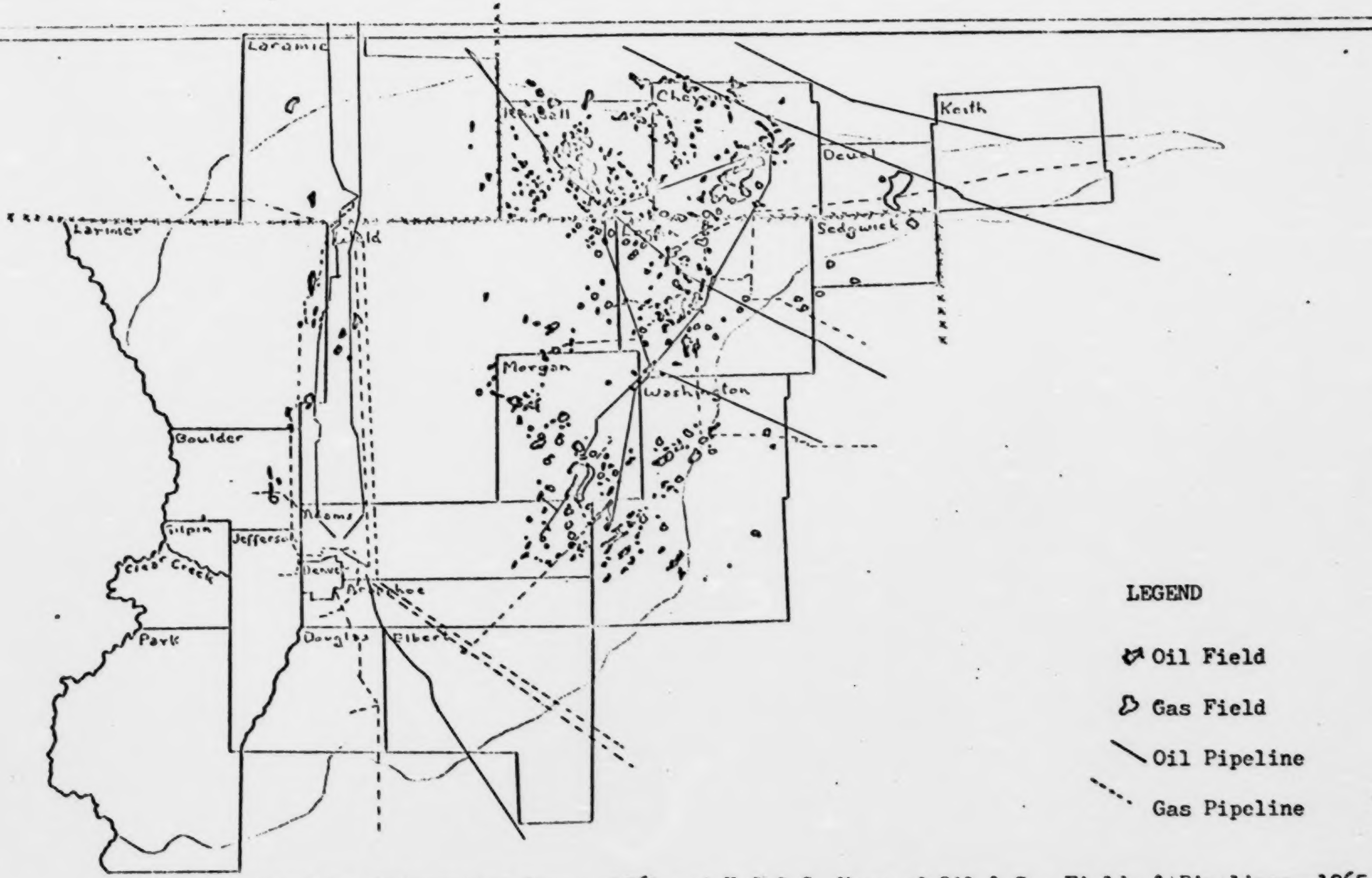
Clay beds of usable quality occur throughout much of the basin, but the greatest exploitation of them takes place in the Metropolitan Subregion. Fifty percent of the clay used is for building brick, sewer pipe, and other heavy clay products; 45 percent is used for manufacture of light-weight aggregates, and five percent for refractory products such as firebrick, crucibles and other foundry purposes.

Sand and gravel is of course produced throughout the basin but in largest quantities in the Metropolitan Subregion where the greatest building activity takes place.

Other non-metallic minerals, produced in some quantity in the basin and mostly used in building materials, include Fluorspar, Gypsum, Lime, Mica, stone, pumicite, and volcanic glass.

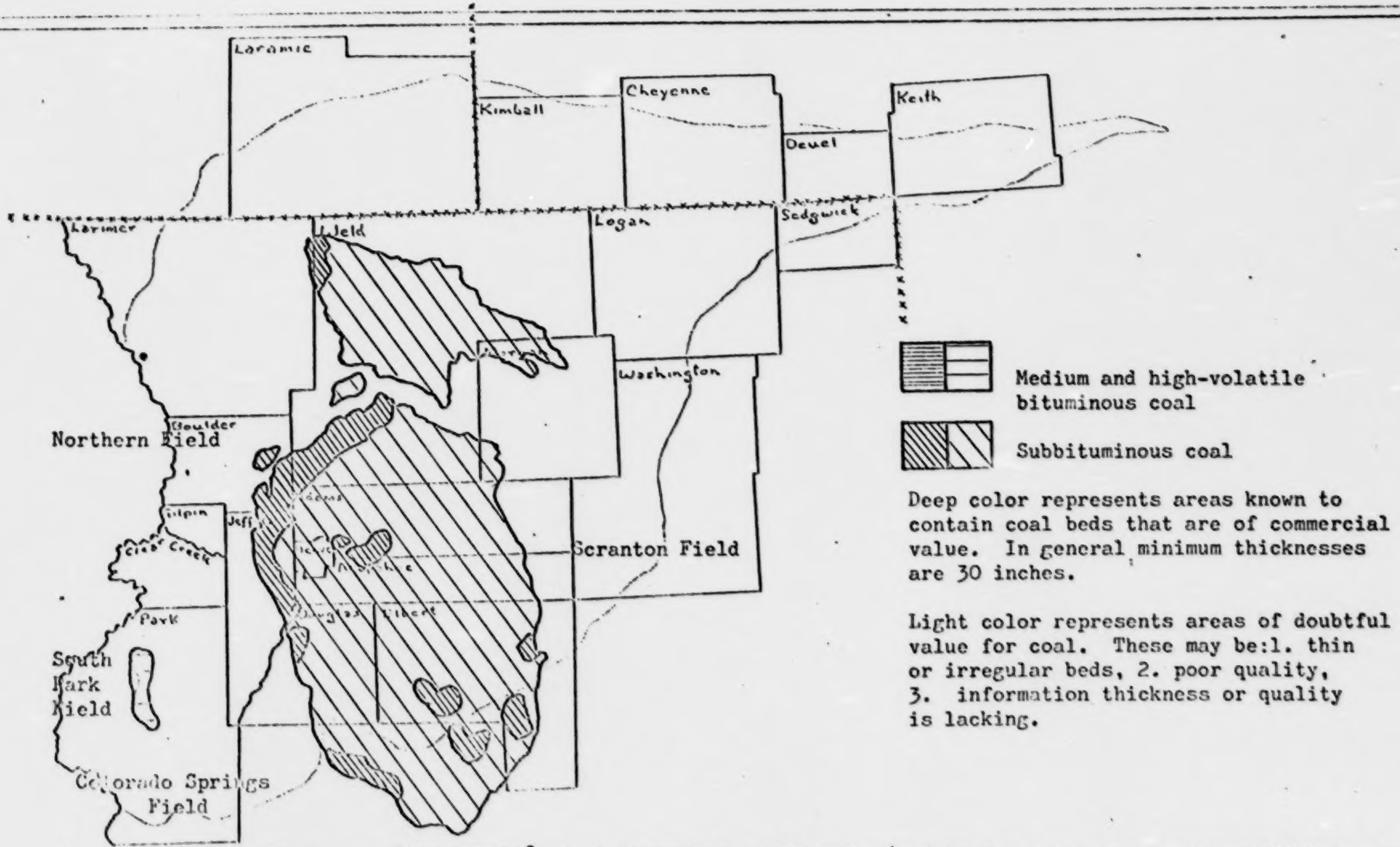
Mineral fuels are the most important mineral product of the plains areas of the basin. As Figure b-10 indicates, oil fields are concentrated on the eastern plains part of the basin in the Denver-Julesburg structural basin, with a considerable portion of the reserves in the Nebraska counties of Kimball and Cheyenne. The first oil discovery in the South Platte Basin was the Boulder field in 1901, which is not part of the major oil bearing structure. It wasn't until 1930 that the first discovery was made in the Denver-Julesburg Basin. The period of major development here was in the late 1940's and early 1950's. Reserves for the entire basin have been estimated to be 30,000,000 barrels of oil and three trillion cubic feet of gas.

The coal fields are located in the center of the basin closer to the mountain front. The major field, called the Denver Region, stretches from near the Wyoming border the entire length of the basin to Colorado Springs just outside the basin to the south. As Figure b-11 shows, it underlies a large portion of the South Platte Basin. Only the darker shaded portions on the chart are consiered to contain beds that are of commercial value.


Laramie
Kimball
Cheyenne
Keith
Deuel
Larimer
Weld
Logan
Sedgwick
Morgan
Washington
Boulder
Adams
Gilpin
Jefferson
Clear Creek
Denver
Arapahoe
Park
Douglas
Elbert
LEGEND
Oil Field
Gas Field
Oil Pipeline
Gas Pipeline

Source: Petroleum Information Corp., 1961 and U.S.G.S. Maps of Oil & Gas Fields & Pipelines, 1965

Fig. b-10 --Oil and Gas Fields in The South Platte River Basin


Laramie
Kimball
Cheyenne
Deuel
Keith
Larimer
Weld
Logan
Sedgwick
Washington
Boulder
Northern Field
Gilpin
Jeff
Clear Creek
Adams
Arapahoe
Scranton Field
Park
Douglas
Elbert
South Park Field
Colorado Springs Field

▤ ▤ Medium and high-volatile bituminous coal

▨ ▨ Subbituminous coal

Deep color represents areas known to contain coal beds that are of commercial value. In general minimum thicknesses are 30 inches.

Light color represents areas of doubtful value for coal. These may be:1. thin or irregular beds, 2. poor quality, 3. information thickness or quality is lacking.

Source: Geological Survey Circular 258, Coal Resources of Colorado (Washington,D.C., Government Print.Off.,1953)

Fig. b-11 --Coal Fields in The South Platte River Basin

For coal of sub-bituminous quality, as this is, this means veins with a minimum thickness of 30 inches with less than 3,000 feet overburden. With these criteria, the coal reserves of the Denver Region underlie 535 square miles of area and contain (within the South Platte River Basin) 3,266,000,000 short tons. Coal has been mined in this field since as early as 1860.

A second field, the South Park field in Park County is much smaller being about 20 miles long by five miles wide. However, applying the same criteria of potential workability as above this reserve is only three square miles in area and 20,000,000 short tons in volume. Although this is thought to be of a higher grade bituminous coal than that of the Denver Region, it has never been commercially exploited.

Figure b-12 is an inventory of all minerals that are known to exist in the South Platte River Basin. It indicates whether or not production has taken place and in which counties of the basin the minerals occur. Figures b-13 to 17 indicate specific locations of the various metallic and non-metallic minerals and construction material resources in the South Platte River Basin.

## FIGURE b-12

## MINERAL RESOURCE OF THE SOUTH PLATTE RIVER BASIN

|  | Metals |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Non-Metals |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | Beryl | Cobalt | Copper | Gold | Iron | Lead | Manganese | Molybdenum | Nickel | Pyrite | Rare Earth | Silver | Tin | Tungsten | Uranium | Vanadium | Zinc | Barium | Alabaster | Cement | Clay | Dolomite | Feldspar | Flagstone | Fluorspar | Gemstones | Granite | Gypsum | Limestone | Marble | Pumicite | Sand, Gravel | Scoria | Silica | Stone | Sulphur | Vermiculite | Mica | Peat |
| Metropolitan |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Adams |  |  |  | θ |  |  |  |  |  |  |  | θ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ |  |  | θ |  |  |  |  |
| Arapahoe |  |  |  | θ |  |  |  |  |  |  |  | θ |  |  | θ |  |  |  |  |  | θ |  |  |  |  |  |  |  | 0 |  |  | θ |  |  | θ |  |  |  |  |
| Boulder | θ | θ | θ | θ |  | θ | 0 | 0 | 0 | 0 | 0 |  | θ | θ | θ | 0 | θ | 0 |  |  | θ |  | θ | θ | θ |  | 0 |  | 0 | 0 |  | θ |  |  | θ |  |  | θ | θ |
| Denver |  |  |  | θ |  |  |  |  |  |  |  | θ |  |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  |  |  |  |  | θ |  |  | θ |  |  |  |  |
| Jefferson | θ | θ | θ | θ |  | θ |  |  |  |  | θ |  |  |  | θ | θ | θ |  |  |  | θ |  | θ |  | θ | θ | 0 | 0 | 0 |  |  | θ |  |  | θ |  | θ | θ |  |
|  | θ | θ | θ | θ |  | θ | 0 | 0 | 0 | 0 | θ | θ | θ | θ | θ | θ | θ | 0 |  |  | θ | θ | θ | θ | θ | θ | 0 | 0 | 0 | 0 |  | θ |  |  | θ |  | θ | θ | 0 |
| Mountain |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Clear Creek | θ |  | θ | θ | 0 | θ | θ | θ |  | 0 |  |  |  |  | θ |  | θ | 0 |  |  | 0 |  | θ |  | 0 | θ | 0 |  |  |  |  | θ |  |  | θ | 0 |  | θ |  |
| Gilpin |  |  | θ | θ | θ | θ | 0 | θ |  | 0 | θ | θ |  | θ | θ |  | θ |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  | θ |  |  | 0 | 0 |  |  | θ |
| Park | θ |  | θ | θ |  | θ |  |  |  |  | θ | θ |  |  | θ |  | θ | 0 |  |  |  |  | 0 |  | 0 |  |  |  | 0 |  | θ | θ | θ |  | 0 |  |  | θ | θ |
|  | θ |  | θ | θ | θ | θ | θ | θ |  | 0 | θ | θ |  | θ | θ |  | θ | 0 |  |  | 0 |  | θ |  | 0 | θ | 0 |  | 0 |  | θ | θ |  |  | θ | 0 |  | θ | θ |
| Irrigated Plains |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Larimer | θ |  | θ | θ |  | θ |  |  |  |  |  | θ |  | θ | θ |  |  |  | θ | θ | 0 | θ | θ |  |  |  | 0 | θ | θ | 0 |  | θ |  |  | 0 |  |  | θ |  |
| Logan |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ |  |  |  |  |  |  |  |  | θ |  |  |  | θ |  |  |  |  |  |  |  |
| Morgan |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  |  |  |  |  | θ |  |  | 0 |  |  |  |  |
| Weld |  |  |  | θ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  |  |  |  |  | θ | 0 |  |  |  |  |  |  |
|  | θ |  | θ | θ |  | θ |  |  |  |  |  | θ |  | θ | θ |  |  |  | θ | θ | 0 | θ | θ |  |  |  | 0 | θ | θ | 0 |  | θ |  |  | 0 |  |  | θ |  |
| Dry Plains |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Douglas | θ |  | θ | θ |  |  | 0 |  |  |  |  | θ |  |  |  |  |  |  |  |  | θ | θ | θ |  | 0 |  | 0 |  | θ |  |  | θ |  | θ | θ |  |  | θ |  |
| Elbert |  |  |  | θ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ |  |  |  |  |  |  |  |
| Sedgwick |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ |  |  |  |  |  |  |  |
| Washington |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ | 0 |  |  |  |  |  |  |
| Cheyenne |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ | θ |  |  |  |  |  |  |  |
| Deuel |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  |  |  |  |  | θ |  |  |  |  |  |  |  |
| Keith |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ |  |  |  |  |  | θ |  |
| Kimball |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ |  |  | θ |  |  |  |  |
| Laramie |  |  | 0 | 0 |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | θ |  | θ | θ |  |  | 0 |  |  |  |  | θ |  |  |  |  |  |  |  |  | θ | θ | θ |  | 0 |  | 0 |  | θ |  |  | θ | 0 | θ | θ |  |  | θ |  |

LEGEND:
Deposits Reported----0
Production Recorded--θ

Source: Colorado Bureau of Mines *Annual Report*, 1964

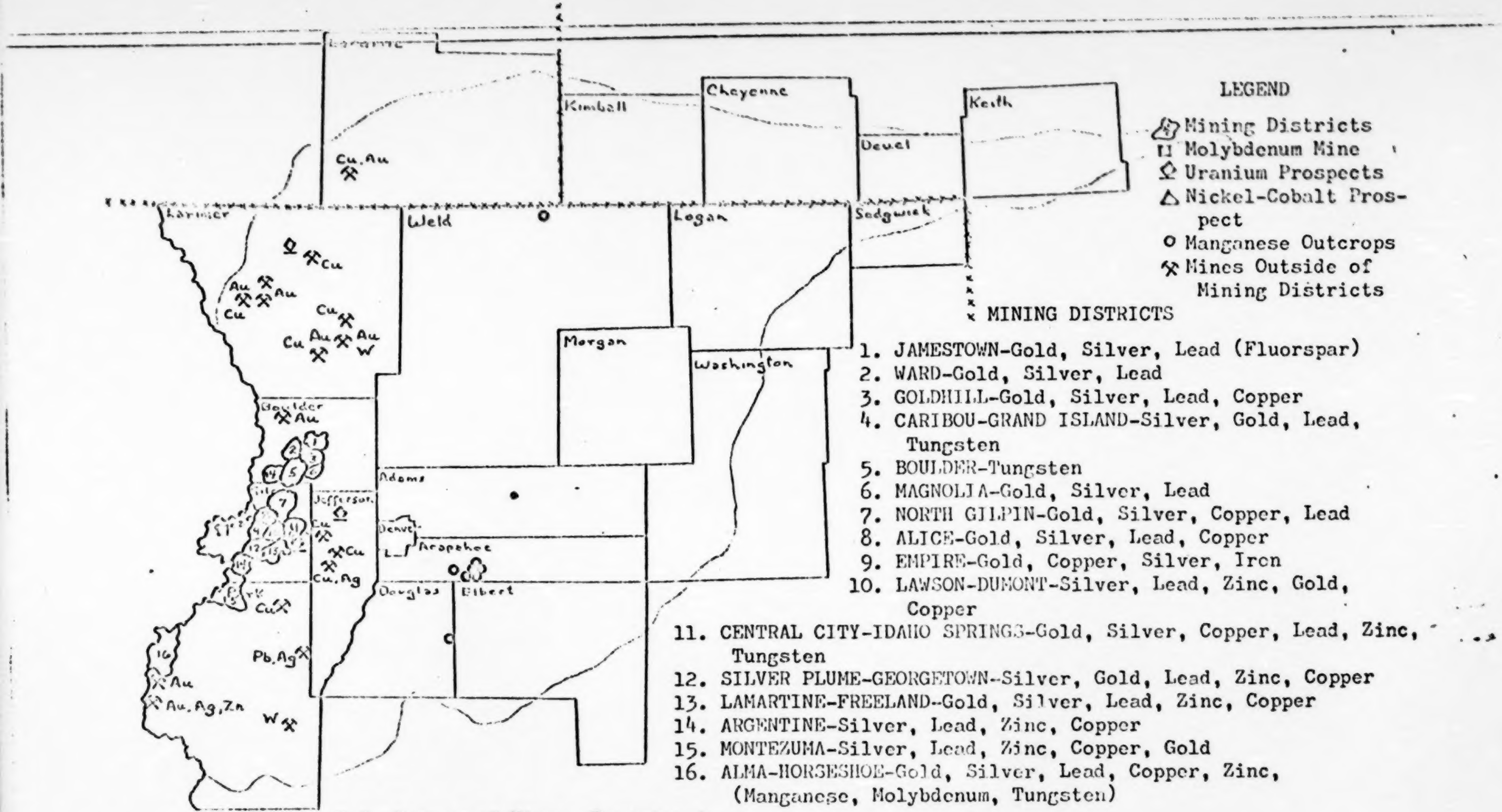
FIGURE b-12

MINERAL RESOURCE OF THE SOUTH PLATTE RIVER BASIN

|  | Metals |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Non-Metals |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Fuels |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | Beryl | Cobalt | Copper | Gold | Iron | Lead | Manganese | Molybdenum | Nickel | Pyrite | Rare Earth | Silver | Tin | Tungsten | Uranium | Vanadium | Zinc | Barium | Alabaster | Cement | Clay | Dolomite | Feldspar | Flagstone | Fluorspar | Gemstones | Granite | Gypsum | Limestone | Marble | Pumicite | Sand, Gravel | Scoria | Silica | Stone | Sulphur | Vermiculite | Mica | Peat | Coal | Gas | Petroleum |
|  |  |  |  | θ |  |  |  |  |  |  |  | θ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ |  |  | θ |  |  |  |  |  | θ | θ |
|  |  |  |  | θ |  |  |  |  |  |  |  | θ |  |  | θ |  |  |  |  |  | θ |  |  |  |  |  |  |  | 0 |  |  | θ |  |  | θ |  |  |  |  |  |  |  |
|  | θ | θ | θ | θ |  | θ | 0 | 0 | 0 | 0 | 0 |  | θ | θ | θ | 0 | θ | 0 |  |  | θ |  | θ | θ | θ |  | 0 |  | 0 | 0 |  | θ |  |  | θ |  |  | θ | θ | θ |  | θ |
|  |  |  |  | θ |  |  |  |  |  |  |  | θ |  |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  |  |  |  |  | θ |  |  | θ |  |  |  |  |  |  |  |
|  | θ | θ | θ | θ |  | θ |  |  |  |  | θ |  |  |  | θ | θ | θ |  |  |  | θ |  | θ |  | θ | θ | 0 | 0 | 0 |  |  | θ |  |  | θ |  | θ | θ |  | θ |  | θ |
|  | θ | θ | θ | θ |  | θ | 0 | 0 | 0 | 0 | θ | θ | θ | θ | θ | θ | θ | 0 |  |  | θ | θ | θ | θ | θ | θ | 0 | 0 | 0 | 0 |  | θ |  |  | θ |  | θ | θ | 0 | θ | θ | θ |
| k | θ |  | θ | θ | 0 | θ | θ | θ |  | 0 |  |  |  |  | θ |  | θ | 0 |  |  | 0 |  | θ |  | 0 | θ | 0 |  |  |  |  | θ |  |  | θ | 0 |  | θ |  |  |  |  |
|  |  |  | θ | θ | θ | θ | 0 | θ |  | 0 | θ | θ |  | θ | θ |  | θ |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  | θ |  |  | 0 | 0 |  |  | θ |  |  |  |
|  | θ |  | θ | θ |  | θ |  |  |  |  | θ | θ |  |  | θ |  | θ | 0 |  |  |  |  | 0 |  | 0 |  |  |  | 0 |  | θ | θ | θ |  | 0 |  |  | θ | θ | 0 |  |  |
| ins | θ |  | θ | θ | θ | θ | θ | θ |  | 0 | θ | θ |  | θ | θ |  | θ | 0 |  |  | 0 |  | θ |  | 0 | θ | 0 |  | 0 |  | θ | θ |  |  | θ | 0 |  | θ | θ |  |  |  |
|  | θ |  | θ | θ |  | θ |  |  |  |  |  | θ |  | θ | θ |  |  |  | θ | θ | 0 | θ | θ |  |  |  | 0 | θ | θ | 0 |  | θ |  |  | 0 |  |  | θ |  | θ | θ | θ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ |  |  |  |  |  |  |  |  | θ |  |  |  | θ |  |  |  |  |  |  |  |  | θ | θ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  |  |  |  |  | θ |  |  | 0 |  |  |  |  |  | θ | θ |
|  |  |  |  | θ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  |  |  |  |  | θ | 0 |  |  |  |  |  |  | θ | θ | θ |
|  | θ |  | θ | θ |  | θ |  |  |  |  |  | θ |  | θ | θ |  |  |  | θ | θ | 0 | θ | θ |  |  |  | 0 | θ | θ | 0 |  | θ |  |  | 0 |  |  | θ |  | θ | θ | θ |
|  | θ |  | θ | θ |  |  | 0 |  |  |  |  | θ |  |  |  |  |  |  |  |  | θ | θ | θ |  | 0 |  | 0 |  | θ |  |  | θ |  | θ | θ |  |  | θ |  |  |  |  |
|  |  |  |  | θ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ |  |  |  |  |  |  |  | θ |  | θ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ | 0 |  |  |  |  |  |  |  | θ | θ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ | θ |  |  |  |  |  |  |  |  | θ | θ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ | θ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  |  |  |  |  | θ |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ |  |  |  |  |  | θ |  | θ | θ | θ |
|  |  |  | 0 | 0 |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | θ |  |  | θ |  |  |  |  |  | θ | θ |
|  | θ |  | θ | θ |  |  | 0 |  |  |  |  | θ |  |  |  |  |  |  |  |  | θ | θ | θ |  | 0 |  | 0 |  | θ |  |  | θ | 0 | θ | θ |  |  | θ |  | θ | θ | θ |

ts Reported----0
tion Recorded--θ

Colorado Bureau of Mines Annual Report, 1964



Laramie
Kimball
Cheyenne
Deuel
Keith
Sedgwick
Larimer
Weld
Logan
Morgan
Washington
Boulder
Adams
Jefferson
Denver
Arapahoe
Douglas
Elbert
Park
Cu, Au
Cu
Au
W
Cu, Ag
Pb, Ag
Au, Ag, Zn
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

LEGEND

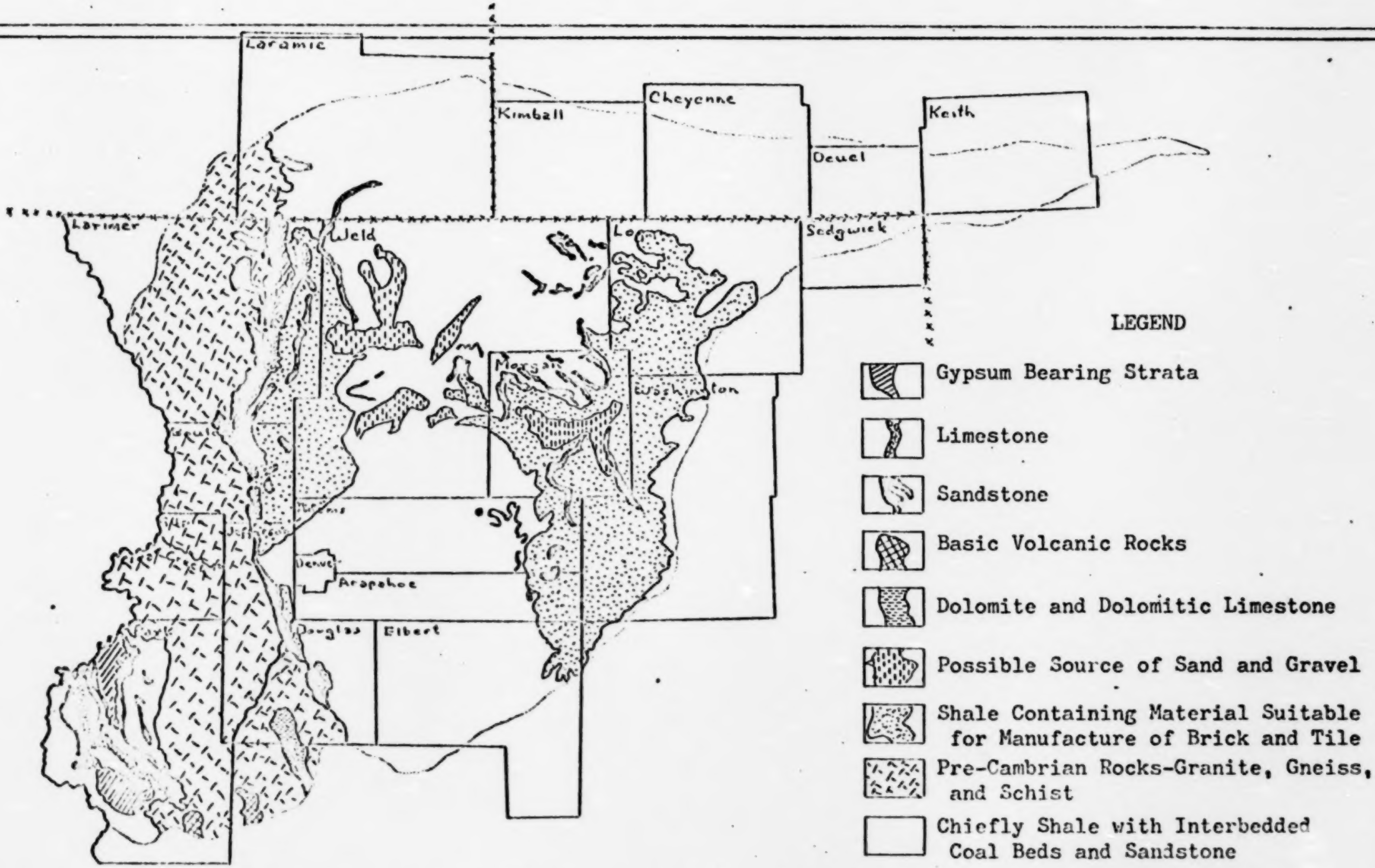
- Mining Districts
- Molybdenum Mine
- Uranium Prospects
- Nickel-Cobalt Prospect
- Manganese Outcrops
- Mines Outside of Mining Districts

MINING DISTRICTS

1. JAMESTOWN-Gold, Silver, Lead (Fluorspar)
2. WARD-Gold, Silver, Lead
3. GOLDHILL-Gold, Silver, Lead, Copper
4. CARIBOU-GRAND ISLAND-Silver, Gold, Lead, Tungsten
5. BOULDER-Tungsten
6. MAGNOLIA-Gold, Silver, Lead
7. NORTH GILPIN-Gold, Silver, Copper, Lead
8. ALICE-Gold, Silver, Lead, Copper
9. EMPIRE-Gold, Copper, Silver, Iron
10. LAWSON-DUMONT-Silver, Lead, Zinc, Gold, Copper
11. CENTRAL CITY-IDAHO SPRINGS-Gold, Silver, Copper, Lead, Zinc, Tungsten
12. SILVER PLUME-GEORGETOWN-Silver, Gold, Lead, Zinc, Copper
13. LAMARTINE-FREELAND-Gold, Silver, Lead, Zinc, Copper
14. ARGENTINE-Silver, Lead, Zinc, Copper
15. MONTEZUMA-Silver, Lead, Zinc, Copper, Gold
16. ALMA-HORSESHOE-Gold, Silver, Lead, Copper, Zinc, (Manganese, Molybdenum, Tungsten)

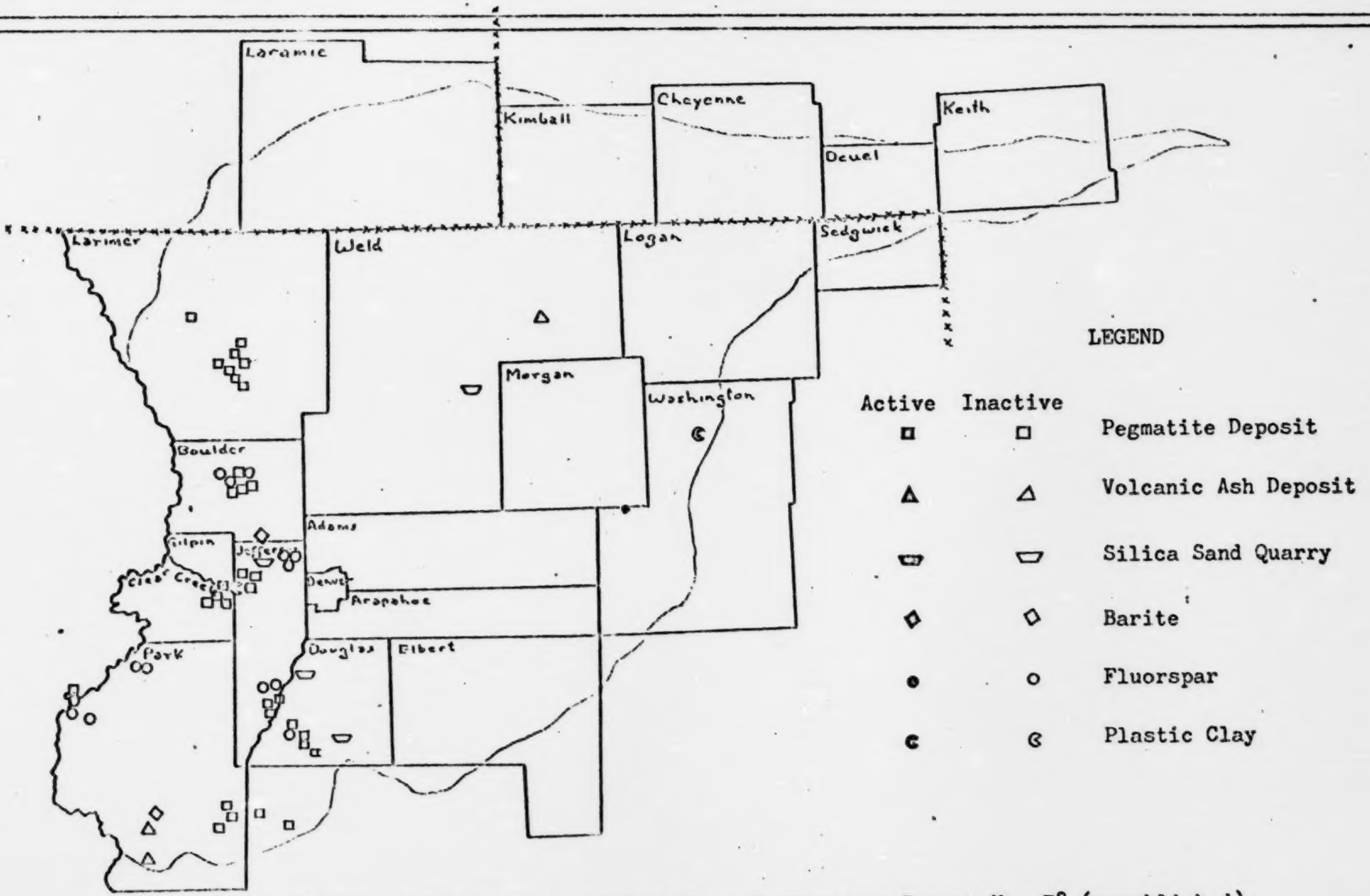
Source: U.S. Bureau of Mines, Department of Interior, Preliminary Report No. 78, (unpublished)

Fig. b-13 --Metallic Mineral Resources in The South Platte River Basin


Laramie
Kimball
Cheyenne
Deuel
Keith
Larimer
Weld
Lo
Sedgwick
Morgan
Washington
Denver
Arapahoe
Douglas
Elbert
LEGEND
Gypsum Bearing Strata
Limestone
Sandstone
Basic Volcanic Rocks
Dolomite and Dolomitic Limestone
Possible Source of Sand and Gravel
Shale Containing Material Suitable for Manufacture of Brick and Tile
Pre-Cambrian Rocks-Granite, Gneiss, and Schist
Chiefly Shale with Interbedded Coal Beds and Sandstone

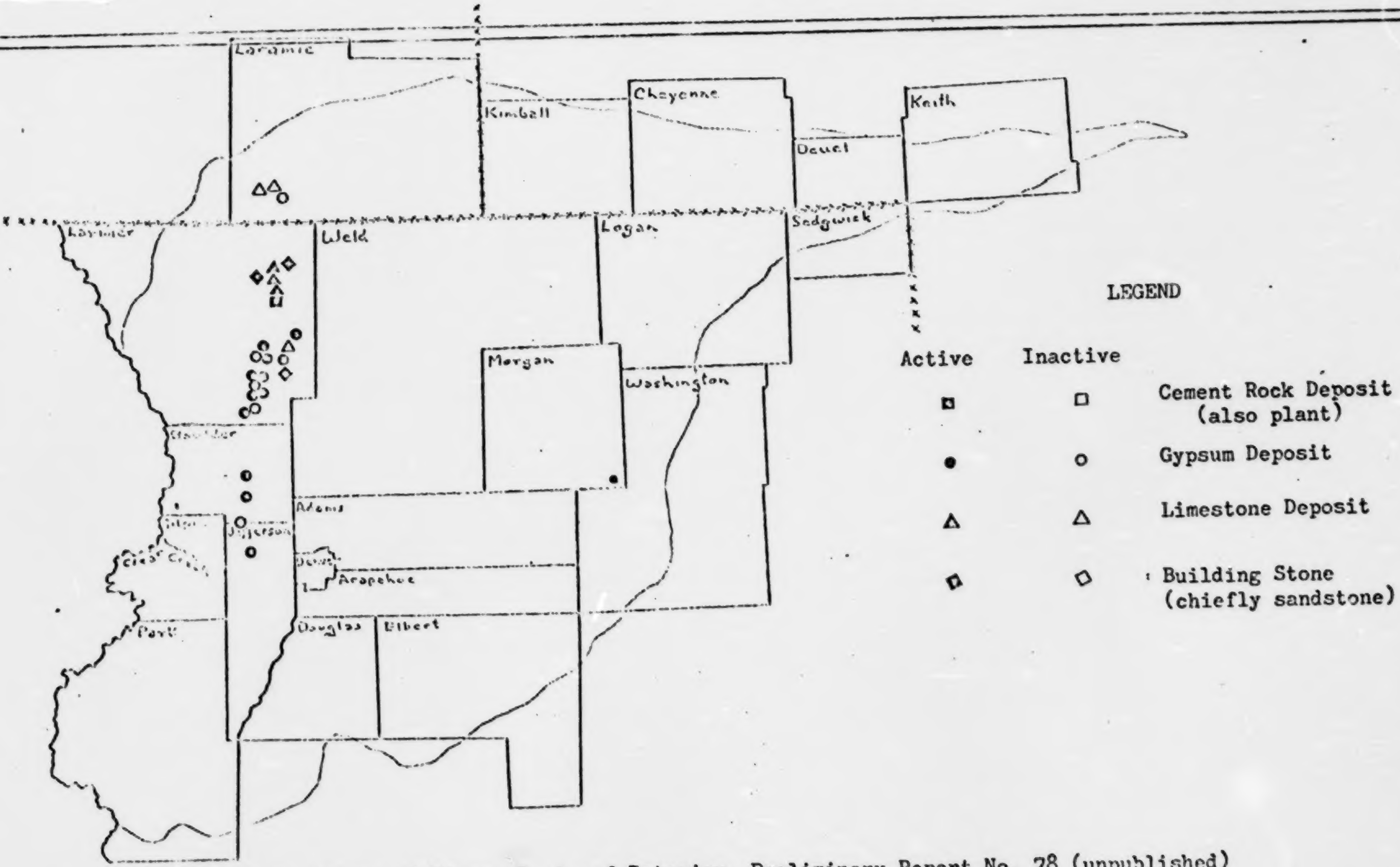
Source: U.S. Bureau of Mines, Department of Interior, Preliminary Report No. 78 (unpublished)

Fig. b-14 --Nonmetallic and Construction Material Resources in The South Platte River Basin


Laramie
Kimball
Cheyenne
Deuel
Keith
Larimer
Weld
Logan
Sedgwick
Morgan
Washington
Boulder
Gilpin
Jefferson
Clear Creek
Adams
Denver
Arapahoe
Park
Douglas
Elbert
LEGEND
Active Inactive
▣ □ Pegmatite Deposit
▲ △ Volcanic Ash Deposit
Silica Sand Quarry
◆ ◇ Barite
● ○ Fluorspar
Plastic Clay

Source: U.S. Bureau of Mines, Dept. of Interior, Preliminary Report No. 78 (unpublished)

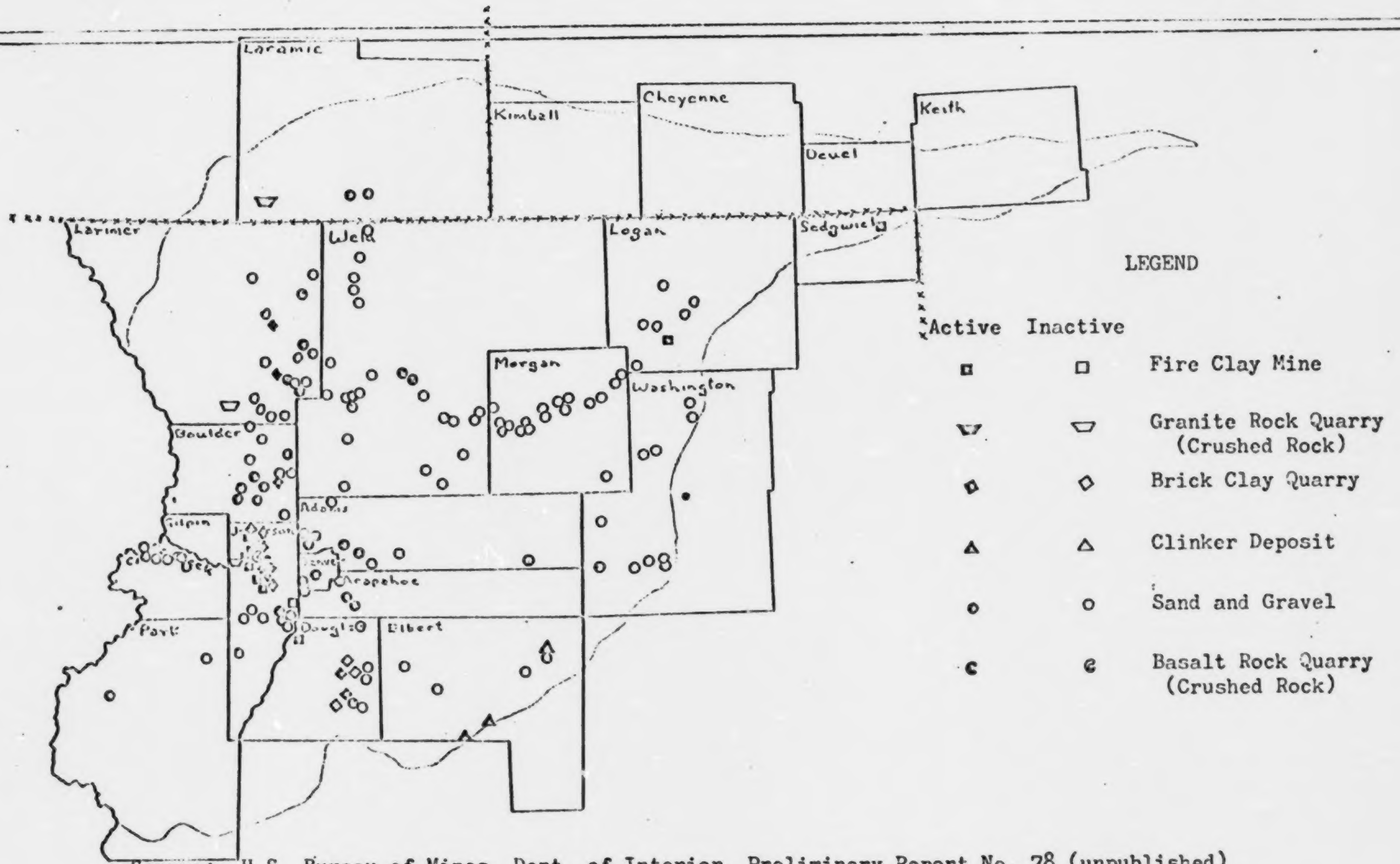
Fig. b-15 --Nonmetallic Mineral Resources in The South Platte River Basin



Laramie
Kimball
Cheyenne
Keith
Deuel
Larimer
Weld
Logan
Sedgwick
Morgan
Washington
Boulder
Adams
Gilpin
Jefferson
Clear Creek
Denver
Arapahoe
Park
Douglas
Elbert
LEGEND
Active
Inactive
◘ □ Cement Rock Deposit (also plant)
● ○ Gypsum Deposit
▲ △ Limestone Deposit
◆ ◇ Building Stone (chiefly sandstone)

Source: U.S. Bureau of Mines, Dept. of Interior, Preliminary Report No. 78 (unpublished)

Fig. b-16 --Construction Materials in The South Platte River Basin (1)

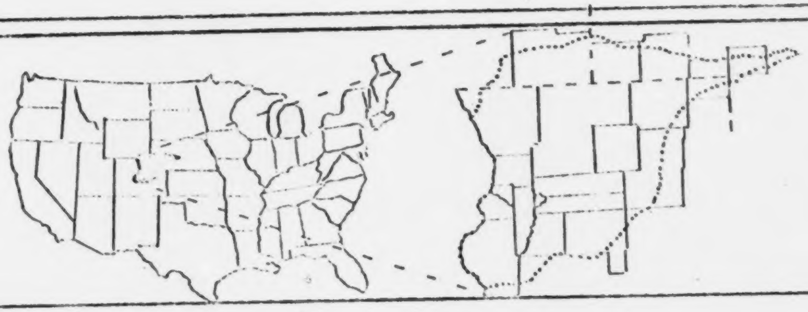

Laramie
Kimball
Cheyenne
Deuel
Keith
Larimer
Weld
Logan
Sedgwick
Morgan
Washington
Boulder
Adams
Gilpin
Jefferson
Denver
Arapahoe
Park
Douglas
Elbert
LEGEND
Active
Inactive
Fire Clay Mine
Granite Rock Quarry (Crushed Rock)
Brick Clay Quarry
Clinker Deposit
Sand and Gravel
Basalt Rock Quarry (Crushed Rock)

Source: U.S. Bureau of Mines, Dept. of Interior, Preliminary Report No. 78 (unpublished)

Fig. b-17 --Construction Materials in The South Platte River Basin (2)

Regional Reconnaissance

Region:
South Platte River Basin
Investigator:
Karl Starch
Date:
1966



I Population Trends

## II. Environment: Natural Resources and Institutions

The SPRB is somewhat remote from the major centers of population and activity in the United States. A part of the Missouri River Basin, it is 29,000 square miles in size. One-quarter of of the region is in the Rocky Mountains, with more than a dozen peaks over 14,000 feet and some of the most attractive mountain scenery and recreation area in the country. Three-quarters of the region is in the Great Plains, flat or gently rolling. The climate is semi-arid (13-17 in. of rainfall annually), mild (temp. range: 25° in Jan. to 75° in July), with much sunshine even in the winter months, and is particularly favorable in the transition zone between the mountains and the plains. This fortunate coincidence of climate and terrain (a handicap when agriculture was the major economic activity) is perhaps the region's most important resource today.

The cities of the region have a great deal of relatively level, open space for expansion. The land of the region is 80% privately owned and 71% farmed. Agricultural activity centers around cattle grazing (7 million acres), supplemented by irrigated (1 million acres) and dryland farming (3/4 million acres). The value of farm products approaches $400 million (2/3 from livestock products).

Water has been extremely important in early agricultural development. The surface supply (1.2 million acre feet (a.f.) per year) is greatly over appropriated (3.7 million a.f. per year used) despite increasing imports (0.3 million a.f. per year). Water availability as a limitation to future growth is more a matter of changing institutions governing its use, the transfer of rights, etc.

Metallic minerals (the most important have been gold, silver, copper, zinc, lead, tungsten and uranium) occur in abundance in the mountain portions of the region, but mining activity has declined to relative unimportance. There is a variety of non-metals, especially building materials such as cement, sand and gravel and stone. There are substantial coal reserves (3 1/4 billion short tons) and oil reserves (30 million barrels) in the plains portion of the region. The coal is finding continuing utilization in electric power generation for the nearby metropolitan area, but petroleum production is declining rapidly.

III Economic Activities

IV Strategic Factors

V Recommendations

Fig. b-18 --Partial Reconnaissance Review Sheet, II. Environment

## c. Economic Activities

### 1. History of Settlement

White settlement of the South Platte River Basin came slowly. The early Spanish explorers did not get this far north and it is believed that the first white men in the area were members of the Mallet Expedition who explored and claimed the area for France in 1739. Entering the area from the north, they crossed the South Platte in the vicinity of Julesburg giving the river its accepted name, Riviere la Platte, Flat River, before traveling on through the eastern part of the basin. France remained nominal sovereign of the area until 1762 when, on the verge of being forced out of North America by England, she ceded all claims on land west of the Mississippi to Spain. Napoleon forced Spain to return these lands to France in 1801 and then sold them to the United States in the Louisiana Purchase of 1803.

The United States sent Major Stephen Long to explore the area in 1819-20. His report gave support to the "Great American Desert" idea that this western plains area of the United States was not suitable for human habitation. This idea remained in vogue for many years. Other military expeditions followed; the Dodge expedition in 1835, Fremont in 1842 and 1843, Kearney in 1845. In the meantime fur trappers and traders had already begun developing one of the areas first usable resources, the beaver pelt. Four of the first five trading posts established east of the Rockies were in the South Platte Basin, and were, in fact, within fifteen miles of each other. Fort Lupton was built in 1836, Fort Vasquez in 1837, Fort Jackson and Vrain in 1838, all in the vicinity of the confluence of the St. Vrain Creek with the South Platte. Perhaps the mild winters and easy accessibility were factors in their location. This phase of development passed quickly.

The movement west to California and Oregon, which began in the 1830's and accelerated after discovery of gold in California in 1849, bypassed the region utilizing the easier mountain crossings to the north and south, although a branch of the Oregon Trail followed the South Platte to the Lower California Crossing at Ogallala and thence along the North Platte, while another followed the South Platte to the Upper California Crossing at Sedgwick and then along Lodgepole Creek. Few white men remained in the basin at this time. The Treaty of Fort Laramie in 1851 gave the South Platte River Basin and all the other land between the Arkansas River and the North Platte River to the Cheyenne and Arapaho Indians who inhabited the area. In 1854 the portion of the basin north of the 40th parallel (the north boundary of Adams County) became part of the newly created Nebraska Territory, that south of that line part of Kansas Territory.

Not until a party of prospectors discovered gold placer on the upper South Platte in the early fall of 1858 was there any inducement to settlement in the South Platte Basin. By the spring of 1859 there was a full scale gold rush to the area. Cities like Blackhawk, Central City, Boulder, Golden, Idaho Springs, Denver, quickly came into being. By the following year freight wagons were rolling along the South Platte to and from Denver and the gold camps. The Pony Express briefly provided a faster communication from Julesburg and points east and west. In 1863 the telegraph line was extended to Denver. The boom town prices of the gold camps encouraged entrepreneurs of all types to set up businesses in the area. Some disappointed gold seekers turned to exploitation of other of the area's resources and began farming bottom land along the streams. Because of the arid climate, irrigation was used very early. The senior water right in the South Platte Basin today was established in 1859.

In 1861, the Treaty of Fort Wise formalized the change in conditions by forcing the Arapaho and Cheyenne to vacate their claim to the South Platte country. Ten days later Colorado became a territory with the same boundaries as the present day state.

The Overland Stage route which had run north of the basin recognized the growing importance of the Colorado gold camps and was rerouted in 1862 down the South Platte to Denver then back up the South Platte and the Cache la Poudre to continue its trip via the Laramie plains to Salt Lake City. Cattle grazing was also started along the South Platte at this time.

A period of Indian unrest and vengeful depredation began with the Sand Creek Massacre in 1864 and had not completely ended until 1869.

An important and somewhat unique institution in the settlement of the South Platte Basin were the agricultural colonies. These were quasi-communal groups which undertook some of the aspects of settlement on a cooperative or collective basis. They were influenced by the utopian socialist ideals of Fourier and St. Simon and although they did not seem to be religiously oriented as were the somewhat similar Mormon settlements in Utah they did have something of a moralistic air about them. The Union Colony, for example, only accepted members who professed alcoholic temperance. Members of such a colony subscribed to a common fund which was then used to locate and purchase lands for the group. Group arrangements were made to get members to the land, usually by railroad (the three successful colonies in the South Platte Basin actually bought and settled on land purchased from the Denver Pacific Railroad and began operations the same year the railroad was completed). Each member then bought his land from the colony and thereafter held it individually, not in common. All the major components of the water diversion and transportation system were built cooperatively. In experience, however, within ten years these communal irrigation systems became private irrigation companies with stock generally held by the users.

Four of the five agricultural colonies that were established in Colorado were in the South Platte River Basin within 30 miles of each other. The first and most successful was the Union Colony whose 140 families began arriving on the colony land near the confluence of the Cache la Poudre and South Platte Rivers in April 1870. This colony was organized and led by the agricultural editor of the New York Tribune and the settlement named after the editor of that paper, Greeley. Early the following spring (1871) the other three major colonies arrived. The Chicago-Colorado Colony located lands on the St. Vrain Creek near the present town of Longmont in Boulder County and the St. Louis-Western Colony settled on the South Platte River just below the entry of the Big Thompson River and just south of the Greeley Colony. The Southwestern-Tennessee Colony was established on the South Platte to the east of Greeley, but quickly failed when proposed irrigation developments failed to materialize and the Colorado Central Railroad abandoned plans to extend its line down the South Platte. The advantages of group action of the colony type in settling an isolated, and especially a semiarid, isolated, region where extensive irrigation is necessary are obvious. Branch settlements or spin-offs from the Union Colony later established the communities of Sterling, Wiggins, Orchard, Fort Morgan, and Windsor, Colorado, and North Platte, Nebraska. Other towns such as Platteville and Fort Collins were developed by land companies and might be termed "lesser colonies."

The development of transportation lines played an important role in settlement of the South Platte River Basin. The basin remained relatively uninhabited while the transportation routes, blocked by the mountain mass at the western end of the basin, detoured to the north or far south of the basin. After discovery of gold in the mountains gave people a reason to enter the basin, transportation development followed, and other types of settlement, particularly agricultural, then became feasible with the access to market thus provided. Numerous towns developed solely to service the transportation lines. Way stations were established every ten miles and "home" stations every 50 miles to service the

Overland Stage line. Some of these became centers of activity and population growth. Later towns were established purely on the basis of being on the railroad line. Pre-existing towns prospered or declined depending on whether or not the railroad came through them. Julesburg and Cheyenne boomed as "end of track" towns on the Union Pacific in the winters of 1867 and 1868. Towns like Sterling, Brush, Fleming, and Akron came into existence as sidings or division points. Other towns like Erie supplied coal to the railroad. The main line of the Union Pacific was built across the northern edge of the South Platte River Basin along Lodgepole Creek in 1868. The Denver Pacific Railroad was completed between Denver and Cheyenne in 1870. The Kansas Pacific reached Denver across the southern plain of the basin in the same year. The Colorado Central built north from Golden to Cheyenne and the Denver and Rio Grande Western south from Denver to Pueblo the same year. In 1882 the Chicago Burlington and Quincy reached Denver across the central plains and the Union Pacific built down the South Platte from Julesburg to LaSalle.

The railroads did more to bring about settlement than just provide direct employment and market access. They actively recruited settlers and established them on railroad grant land. The land agents of the Chicago, Burlington, and Quincy and the Kansas Pacific Railroad were instrumental in bringing many families to the eastern plains portion of the South Platte River Basin after choicest lands in Kansas and Nebraska were taken. Their efforts in the mid 1880's were aided by a series of wet years which led them to claim eastern Colorado was in a "rain belt." The fallacy of this claim was seen a few years later as "busted" farmers left the area.

After a presidential executive order in 1885 ended efforts of cattlemen to keep farmers out by fencing in large areas of the public domain, the eastern portion of the basin was reopened to homesteading and in 1886 a general immigration began. Farming in this part of the basin was more hazardous as farming techniques developed in the east were not suitable for the arid conditions encountered.[1]

The mild winters, adequate water, and good grass attracted cattlemen to the South Platte River Basin as early as 1861. Several cattle trains from Texas passed through the basin. Ogallala, Nebraska, was the outstanding "cow town" of the basin and it has been estimated that one-third of all Texas cattle were marketed through Ogallala.[2] Brush, Colorado, was founded on the site of favorite river crossing point of the trail herds. Deer Trail, Iliff, and Elbert were cattle towns. The years 1865-1885 were the big cattle years in the basin, It has been said that there were nearly two and a quarter million dollars worth of cattle on the eastern Colorado plains in 1877. The decree forbidding enclosure of the public domain by cattlemen in 1885 and two severe cattle-killing winters in a row in 1885-86 and 1886-87 were crippling blows to the industry resulting in wholesale bankruptcy and a change in the nature of the industry.

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[1] An interesting example of how grossly misleading the information about the area that was given to prospective settlers was, is an advertising brochure in the Western History Collection of the Denver Public Library entitled "Irrigated America." This circular, published in 1895, claims that a 40-acre irrigated farm in the South Platte River Basin would support a family very handsomely. The average size of irrigated farms in the area in 1959 was over 400 acres. The average size of farm in the Dry Plains Subregion in 1959 was 1,473 acres.

As it may be said that major factors in settlement of the Mountain Subregion of the basin were the discoveries of gold and of the Irrigated Plains Subregion the agriculture colonies, so the railroad towns and the individual homesteader were more typical of the settlement pattern in the Dry Plains Subregim of the basin where settlement came a decade and a half later than in the Irrigated Plains Subregion and two and a half decades later than in the Mountain Subregion.

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[2] Dean Krakel, South Platte Country, A History of Old Weld County.

Metal mining reached its peak in the 1890's. In 1900, $50 million in gold, silver, copper, and lead was produced in Colorado. By 1921, production had declined to less than a third of this amount. The repeal of the Silver Purchase Act in 1893 brought about a general depression in the mining industry of the basin. Agriculture became the central economic activity. The development of irrigation institutions have been important to this agricultural development. The first irrigation systems were small bottom land ditches individually built. These were followed by larger projects requiring cooperative or community action such as that provided by the agricultural colonies. As an illustration of the scale of such systems, the Greeley Canal No. 2 constructed in 1870 was 36 miles long, 32 feet wide, and supplied water to bench lands. The next step in irrigation expansion required much money, outside investors, and incorporation. Companies such as The Larimer and Weld County Irrigation Co., North Poudre Canal and Reservoir Co., Water Supply and Storage Co., built large storage reservoirs, transported water from the upper stream basins and began importing water across the mountains from other river basins. The Greeley, Poudre Reservoir and Irrigation Co. spent $12 million constructing a huge system to import water from the North Platte Basin to irrigate 125,000 acres in the South

Platte Basin only to have a court decree in 1912 find that the water it intended to import belonged to Wyoming users under prior appropriation. This case did, however, affirm the legality of transporting water from one river basin to another. Ultimately the financial and planning requirements of obtaining more water became so great that participation of the Federal Government became necessary to complete an irrigation system of the magnitude of the Colorado-Big Thompson Project which began transporting water from the Colorado River Basin to the South Platte River Basin in 1947.

The more recent large upsurge in population in the South Platte River Basin has been based on a combination of the climate and recreation resources of the area with technological changes in industry and transportation which have in part overcome the area's location disadvantages. In addition, the population of the basin may have reached a size that in itself generates additional expansion.

## 2. Employment in the South Platte

The civilian labor force in the South Platte River Basin (as seen in Table c-1) was nearly a half million in 1960. This was an increase of 41 percent over the preceding decade and 76 percent over the number in the labor force in 1940. This rate of growth is much higher than the rate of growth in the labor force of the United States as a whole during the same period, 2.75 times greater in the 1950-60 period. The gap in the rate of growth between the two regions has, in fact, been greater for each successive decade since 1940. The divergence between the increase in labor force and the increase in population has been less in the South Platte River Basin than in the United States which would seem to indicate that a larger proportion of the population increase in the South Platte River Basin is in the productive age groups than in the United States generally.[1]

The rate of change varies greatly among subregions of the basin. The Metropolitan Subregion shows the most impressive change, an increase of fifty percent between 1950 and 1960 and nearly one hundred percent

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[1] This suggests a high rate of immigration as discussed in the section on population.

## TABLE c-1

## LABOR FORCE OF THE SOUTH PLATTE RIVER BASIN, SUBREGIONS AND RELATED AREAS, AND PERCENT CHANGE IN LABOR FORCE COMPARED TO CHANGE IN POPULATION 1940, 1950, 1960

| Area | Civilian Labor Force | | |
|---|---|---|---|
| | 1940 | 1950 | 1960 |
| Metropolitan | | | |
| Adams | 8,305 | 13,059 | 42,275 |
| Arapahoe | 12,127 | 18,824 | 41,600 |
| Boulder | 13,951 | 17,237 | 28,235 |
| Denver | 137,393 | 174,072 | 203,821 |
| Jefferson | 11,318 | 20,584 | 49,836 |
| | 183,094 | 243,776 | 365,767 |
| Irrigated Plains | | | |
| Larimer | 12,565 | 15,917 | 20,192 |
| Logan | 6,512 | 6,714 | 7,309 |
| Morgan | 5,771 | 6,755 | 7,763 |
| Weld | 21,484 | 23,152 | 25,911 |
| | 46,332 | 52,538 | 61,175 |
| Mountain | | | |
| Clear Creek | 1,524 | 1,288 | 1,137 |
| Gilpin | 682 | 344 | 274 |
| Park | 1,401 | 782 | 764 |
| | 3,607 | 2,416 | 2,175 |
| Dry Plains | | | |
| Douglas | 1,348 | 1,373 | 1,662 |
| Elbert | 2,059 | 1,638 | 1,423 |
| Sedgwick | 2,057 | 1,932 | 1,688 |
| Washington | 3,075 | 2,863 | 2,425 |
| Cheyenne | 3,506 | 5,034 | 5,490 |
| Deuel | 1,366 | 1,328 | 1,201 |
| Keith | 3,144 | 2,941 | 3,086 |
| Kimball | 1,523 | 1,779 | 2,911 |
| Laramie | 16,647 | 16,282 | 23,328 |
| | 34,725 | 35,170 | 43,214 |
| South Platte River Basin | 267,758 | 333,900 | 471,862 |
| Colorado | 418,293 | 497,648 | 652,805 |
| Nebraska | 499,313 | 523,329 | 542,658 |
| Wyoming | 96,109 | 112,666 | 127,328 |
| United States | 52,705,082 | 59,303,720 | 68,144,079 |

Source: U.S. Bureau of Census, Census of Population, General, Social, and Economic Characteristics, 1960 (Table 83), 1950 (Table 43), 1940 (Table 23).

TABLE c-1--Continued

| Area | Percent Increase in Labor Force |  |  | Percent Increase in Population |  |  |
|---|---|---|---|---|---|---|
|  | 1940-50 | 1950-60 | 1940-60 | 1940-50 | 1950-60 | 1940-60 |
| Metropolitan |  |  |  |  |  |  |
| Adams | 57.2 | 223.7 | 409.0 | 79 | 199 | 435.1 |
| Arapahoe | 55.2 | 120.9 | 243.0 | 62 | 118 | 252.8 |
| Boulder | 23.5 | 63.8 | 102.3 | 29 | 54 | 98.3 |
| Denver | 26.6 | 17.0 | 48.3 | 29 | 19 | 53.1 |
| Jefferson | 81.8 | 142.1 | 340.3 | 81 | 129 | 315.0 |
|  | 33.1 | 50.0 | 99.7 | 37.5 | 51.8 | 108.7 |
| Irrigated Plains |  |  |  |  |  |  |
| Larimer | 26.6 | 26.8 | 60.7 | 23 | 22 | 50.0 |
| Logan | 3.1 | 8.8 | 12.2 | -6 | 18 | 10.5 |
| Morgan | 17.0 | 14.9 | 34.5 | 5 | 17 | 17.2 |
| Weld | 7.7 | 11.9 | 20.6 | 6 | 7 | 7.1 |
|  | 13.3 | 16.4 | 32.0 | 8.5 | 14.3 | 14.2 |
| Mountain |  |  |  |  |  |  |
| Clear Creek | -15.5 | -11.8 | -25.4 | -13 | -15 | -26.2 |
| Gilpin | -49.6 | -20.4 | -59.9 | -48 | -19 | -57.9 |
| Park | -44.2 | -2.4 | -45.5 | -43 | -3 | -2.6 |
|  | -33.1 | -10.0 | -39.7 | -30.8 | -11.8 | -39.0 |
| Dry Plains |  |  |  |  |  |  |
| Douglas | 1.8 | 21.0 | 23.2 | 0.03 | 37 | 37.8 |
| Elbert | -20.5 | -13.2 | -30.9 | -18 | -17 | -32.1 |
| Sedgwick | -6.1 | -12.7 | -18.0 | -4 | -17 | -16.8 |
| Washington | -6.9 | -15.3 | -21.2 | -10 | -12 | -20.6 |
| Cheyenne | 43.5 | 9.0 | 56.5 | 27 | 2 | 22.7 |
| Deuel | -2.8 | -9.6 | -12.1 | -7 | -6 | -6.2 |
| Keith | -6.5 | 4.9 | -1.9 | -10 | 7 | -4.6 |
| Kimball | 16.8 | 63.6 | 91.1 | 9 | 86 | 103.8 |
| Laramie | -2.2 | 43.2 | 40.1 | 42 | 26 | 78.8 |
|  | 1.2 | 22.8 | 24.4 | 17.0 | 18.9 | 39.0 |
| South Platte River Basin | 24.7 | 41.3 | 76.2 | 28.2 | 41.3 | 81.2 |
| Colorado | 18.9 | 31.1 | 56.0 | 18.0 | 32.4 | 56.1 |
| Nebraska | 4.8 | 3.6 | 8.6 | 0.7 | 6.5 | 7.2 |
| Wyoming | 17.2 | 13.0 | 32.4 | 15.9 | 13.6 | 19.5 |
| United States | 12.5 | 14.9 | 29.2 | 14.5 | 18.5 | 35.6 |

Source: U. S. Bureau of Census, Census of Population, General, Social, and Economic Characteristics, 1960 (Table 83), 1950 (Table 43), 1940 (Table 23).

between 1940 and 1960. The Metropolitan counties dominate the labor force of the basin in terms of sheer numbers as well, comprising more than three quarters of the total labor force of the basin. The Irrigated Plains Subregion has shown a consistent growth in labor force very similar to that of the United States, but contrary to the trend in the United States and the Metropolitan Subregion the percentage increase in the labor force has exceeded that of the total population each decade indicating a greater proportionate increase in the productive age groups. In the Mountain Subregion the labor force has been decreasing - 40 percent in 20 years - although apparently at a decreasing rate. The Dry Plains Subregion experienced a great surge in labor force growth in the 1950-60 decade although still only half that of the South Platte River Basin as a whole. The totals figure in this case is somewhat misleading. The trend for the nine counties in the subregion is dominated by a single county, Laramie, Wyoming, in which is located the city of Cheyenne. The labor force of this county comprises more than half the subregional total. Only three of the remaining counties have had an increase in labor force since 1940. Two of these are Nebraska counties with growing cities in them; the other is Douglas County which is beginning to feel the influence of the adjacent Metropolitan Denver.[2]

Table c-2 divides employment within the basin into the various industrial sectors and compares the share of total employment in each sector in the region and subregions with the corresponding proportion in the surrounding states and the United States. In terms of Colin Clark's sector theory of economic development, the South Platte River Basin has had a more advanced economy than the United States as a whole throughout the twenty year period of analysis. This is only true, however, by virtue of the dominance of the Metropolitan Subregion. The other three regions, like the surrounding states of Colorado, Nebraska, and Wyoming, show a much higher share of employment in the primary industries than the South Platte River Basin or the United States. The share of employment in these sectors in the South Platte River Basin is declining, but the percentage so

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[2] Employment data used here in Bureau of Census data which is based on household interviews and hence shows employment by place of residence of the worker rather than place of employment as the Social Security and Bureau of Labor Statistics data does. Hence a portion of the employment increase shown for Douglas County represents people living in suburban Douglas County but working in Denver.

## TABLE c-2

## EMPLOYMENT BY INDUSTRY GROUP IN THE SOUTH PLATTE RIVER BASIN SUBREGIONS AND RELATED REGIONS, PERCENTAGE OF TOTAL, 1940, 1950, 1960

| | 1960 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Industry Group | Met. S-R | Irr. Plns. S-R | Mtn. S-R | Dry Plns. S-R | SPRB | Colo | Nebr | Wyo | U.S. |
| Primary Industries | 2.8 | 21.6 | 13.1 | 16.7 | 6.5 | 9.5 | 20.8 | 19.7 | 7.2 |
| Agriculture | 1.9 | 20.0 | 9.7 | 14.4 | 5.4 | 7.4 | 20.5 | 12.8 | 6.3 |
| Mining | 0.9 | 1.6 | 3.4 | 2.3 | 1.1 | 2.1 | 0.3 | 6.9 | 0.9 |
| Secondary Industries | 25.2 | 17.1 | 23.3 | 20.3 | 23.7 | 21.8 | 17.6 | 15.8 | 31.2 |
| Manufacturing | 18.5 | 9.4 | 5.6 | 9.8 | 16.4 | 15.1 | 11.8 | 7.2 | 25.7 |
| Construction | 6.7 | 7.7 | 17.7 | 10.5 | 7.3 | 6.7 | 5.8 | 8.6 | 5.5 |
| Trade Sectors | 20.4 | 18.1 | 19.8 | 17.4 | 19.9 | 19.4 | 18.8 | 18.1 | 17.2 |
| Wholesale | 4.8 | 2.9 | 1.2 | 2.2 | 4.3 | 3.7 | 3.5 | 2.1 | 3.2 |
| Retail | 15.6 | 15.2 | 18.6 | 15.2 | 15.6 | 15.7 | 15.3 | 16.0 | 14.0 |
| Semi-Public Services | 8.3 | 6.5 | 7.6 | 10.8 | 8.3 | 7.5 | 7.9 | 9.8 | 6.5 |
| Transportation | 5.1 | 3.4 | 3.0 | 7.9 | 5.1 | 4.5 | 5.0 | 6.7 | 4.0 |
| Communication | 1.8 | 1.3 | 2.3 | 1.4 | 1.7 | 1.5 | 1.3 | 1.3 | 1.2 |
| Public Utilities | 1.4 | 1.8 | 2.3 | 1.5 | 1.5 | 1.5 | 1.6 | 1.8 | 1.3 |
| Private Services | 23.3 | 17.3 | 17.7 | 17.0 | 21.9 | 21.1 | 18.7 | 17.2 | 18.3 |
| F.I.R.E.[a] | 5.7 | 3.3 | 2.3 | 3.2 | 5.1 | 4.5 | 4.0 | 2.8 | 3.9 |
| Business & Repair | 2.9 | 2.1 | 2.5 | 2.2 | 2.7 | 2.5 | 2.2 | 1.9 | 2.3 |
| Personal | 5.8 | 5.8 | 8.9 | 5.9 | 5.8 | 5.9 | 5.2 | 6.4 | 5.6 |
| Entertain. & Rec. | 0.9 | 0.6 | 1.3 | 0.7 | 0.9 | 0.8 | 0.7 | 0.5 | 0.7 |
| Professional & Related | 8.0 | 5.5 | 2.7 | 5.0 | 7.4 | 7.4 | 6.6 | 5.6 | 5.8 |
| Government Services | 12.9 | 13.4 | 13.2 | 12.7 | 12.9 | 12.6 | 9.8 | 11.1 | 9.6 |
| Education | 5.8 | 9.6 | 8.0 | 4.8 | 6.2 | 6.4 | 5.5 | 6.1 | 4.9 |
| Public Admin. | 7.1 | 3.8 | 5.2 | 7.9 | 6.7 | 6.2 | 4.3 | 5.0 | 4.7 |
| Industry Not Reported | 3.8 | 2.1 | 1.4 | 2.1 | 3.4 | 3.2 | 2.5 | 2.2 | 3.8 |
| Unemployed | 3.3 | 3.8 | 3.8 | 2.9 | 3.4 | 3.9 | 3.0 | 5.1 | 5.1 |

[a] Finance, Insurance, Real Estate

Source: Table c-12, Appendix C

TABLE c-2 Continued

| Industry Group | 1950 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Met. S-R | Irr. Plns S-R | Mtn. S-R | Dry Plns S-R | SPRB | Colo | Nebr | Wyo | U.S. |
| Primary Industries | 4.1 | 32.4 | 23.0 | 26.8 | 11.2 | 16.5 | 29.1 | 27.4 | 13.3 |
| Agriculture | 3.6 | 31.7 | 14.5 | 25.9 | 10.5 | 14.5 | 28.9 | 19.7 | 11.8 |
| Mining | 0.5 | 0.7 | 8.5 | 0.9 | 0.7 | 2.0 | 0.2 | 7.7 | 1.5 |
| Secondary Industries | 23.3 | 14.5 | 20.7 | 10.3 | 20.6 | 19.3 | 15.1 | 13.7 | 30.5 |
| Manufacturing | 15.3 | 6.1 | 4.3 | 3.9 | 12.6 | 11.7 | 8.9 | 5.7 | 24.7 |
| Construction | 8.0 | 8.4 | 16.4 | 6.4 | 8.0 | 7.6 | 6.2 | 8.0 | 5.8 |
| Trade Sectors | 23.0 | 17.6 | 19.6 | 17.2 | 21.5 | 20.1 | 18.5 | 16.1 | 17.7 |
| Wholesale | 5.2 | 2.9 | 1.4 | 2.3 | 4.5 | 3.9 | 3.7 | 2.0 | 3.3 |
| Retail | 17.8 | 14.7 | 18.2 | 14.9 | 17.0 | 16.2 | 14.8 | 14.1 | 14.4 |
| Semi-Public Services | 10.6 | 5.5 | 6.1 | 13.9 | 10.1 | 8.9 | 8.8 | 12.3 | 7.3 |
| Transportation | 7.1 | 3.1 | 3.4 | 11.7 | 6.9 | 5.9 | 6.3 | 9.8 | 4.9 |
| Communication | 1.9 | 1.0 | 1.0 | 1.1 | 1.7 | 1.5 | 1.1 | 1.1 | 1.1 |
| Public Utilities | 1.6 | 1.4 | 1.7 | 1.1 | 1.5 | 1.5 | 1.4 | 1.4 | 1.3 |
| Private Services | 22.6 | 14.6 | 15.3 | 14.2 | 20.4 | 19.0 | 15.3 | 14.4 | 16.6 |
| F.I.R.E.[a] | 4.8 | 2.1 | 1.1 | 2.1 | 4.1 | 3.4 | 3.3 | 2.0 | 3.2 |
| Business & Repair | 3.1 | 3.2 | 3.2 | 2.8 | 3.1 | 3.0 | 2.6 | 2.7 | 2.2 |
| Personal | 6.5 | 4.9 | 7.0 | 5.1 | 6.1 | 5.9 | 4.4 | 5.1 | 5.8 |
| Entertain. & Rec. | 1.2 | 1.0 | 1.2 | 0.7 | 1.1 | 1.1 | 0.8 | 0.9 | 0.8 |
| Professional & Related | 7.0 | 3.4 | 2.8 | 3.5 | 6.0 | 5.6 | 4.2 | 3.7 | 4.6 |
| Government Services | 10.8 | 9.7 | 8.5 | 13.1 | 10.9 | 9.8 | 7.8 | 9.3 | 7.7 |
| Education | 4.4 | 6.5 | 4.0 | 3.8 | 4.7 | 4.5 | 4.0 | 4.4 | 3.5 |
| Public Admin. | 6.4 | 3.2 | 4.5 | 9.3 | 6.2 | 5.3 | 3.8 | 4.9 | 4.2 |
| Industry Not Reported | 1.5 | 1.4 | 2.2 | 1.7 | 1.5 | 1.4 | 2.2 | 1.6 | 1.4 |
| Unemployed | 3.9 | 4.1 | 4.6 | 2.8 | 3.8 | 4.2 | 2.2 | 4.2 | 4.8 |

[a] Finance, Insurance, Real Estate

Source: Table c-12, Appendix C

## TABLE c-2 Continued

| Industry Group | 1940 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Met. S-R | Irr. Plns S-R | Mtn. S-R | Dry Plns S-R | SPRB | Colo. | Nebr. | Wyo. | U.S. |
| Primary Industries | 6.4 | 36.1 | 43.1 | 29.2 | 14.9 | 21.5 | 32.5 | 33.1 | 17.9 |
| Agriculture | 4.9 | 34.4 | 14.2 | 29.1 | 13.2 | 17.7 | 32.4 | 26.6 | 16.2 |
| Mining | 1.5 | 1.7 | 28.9 | .1 | 1.7 | 3.8 | 0.1 | 6.5 | 1.7 |
| Secondary Industries | 16.4 | 7.6 | 7.9 | 7.0 | 13.6 | 12.7 | 9.3 | 9.0 | 24.1 |
| Manufacturing | 11.6 | 4.4 | 2.4 | 2.2 | 9.0 | 8.5 | 5.9 | 4.7 | 20.2 |
| Construction | 4.8 | 3.2 | 5.5 | 4.8 | 4.6 | 4.2 | 3.4 | 4.3 | 3.9 |
| Trade Sectors | 20.1 | 13.0 | 9.8 | 11.6 | 17.7 | 16.0 | 18.8 | 12.7 | 14.1 |
| Wholesale | 3.9 | 1.9 | 0.3 | 1.8 | 3.3 | 2.7 | 2.9 | 1.5 | 2.2 |
| Retail | 16.2 | 11.1 | 9.5 | 9.8 | 14.4 | 13.3 | 15.9 | 11.2 | 11.9 |
| Semi-Public Services | 8.3 | 4.2 | 3.5 | 10.6 | 7.8 | 6.8 | 6.6 | 9.2 | 5.8 |
| Transportation | 5.8 | 2.8 | 2.3 | 9.4 | 5.7 | 4.9 | 4.9 | 7.9 | 4.1 |
| Communication | 1.4 | 0.7 | 0.4 | .6 | 1.1 | 1.0 | 0.9 | 0.5 | 0.7 |
| Public Utilities | 1.1 | 0.7 | 0.8 | .6 | 1.0 | 0.9 | 0.8 | 0.8 | 1.0 |
| Private Services | 21.9 | 11.9 | 9.5 | 11.5 | 18.2 | 17.0 | 15.0 | 13.6 | 15.8 |
| F.I.R.E.[a] | 4.4 | 1.5 | 0.8 | 1.4 | 3.4 | 2.7 | 2.7 | 1.3 | 2.7 |
| Business & Repair | 2.3 | 1.9 | 1.6 | 1.6 | 2.1 | 2.1 | 1.8 | 1.8 | 1.6 |
| Personal | 8.6 | 5.3 | 4.5 | 5.2 | 7.5 | 7.0 | 6.2 | 5.8 | 7.4 |
| Entertain. & Rec. | .8 | .6 | .6 | 0.5 | 1.0 | 0.7 | 0.6 | 0.7 | 0.7 |
| Professional & Related | 5.8 | 2.6 | 2.0 | 2.8 | 4.2 | 4.5 | 3.7 | 4.0 | 3.4 |
| Government Services | 9.0 | 7.9 | 5.4 | 18.7 | 10.6 | 7.7 | 6.8 | 10.8 | 5.5 |
| Educational | 3.0 | 5.0 | 3.0 | 2.9 | 3.9 | 3.4 | 3.5 | 2.9 | 2.9 |
| Public Admin. | 6.0 | 2.9 | 2.4 | 15.8 | 6.7 | 4.3 | 3.3 | 7.9 | 2.6 |
| Industry Not Reported | 1.6 | 1.0 | 0.9 | 0.7 | 1.4 | 1.3 | 0.9 | 1.0 | 1.3 |
| Unemployed | 8.7 | 10.5 | 12.4 | 5.5 | 8.6 | 9.5 | 6.7 | 9.0 | 14.4 |
| Relief Work | 6.5 | 6.9 | 6.4 | 4.2 | 6.3 | 7.6 | 6.7 | 5.3 | |

[a] Finance, Insurance, Real Estate

Source: Table c-12, Appendix C

employed in the United States is declining at a faster rate. On the other hand, the share of employment in secondary industries, which is also less than that of the United States, is increasing at a faster rate in the South Platte River Basin and moving up towards the U. S. figure. In the trade sectors and service sectors in which a greater proportion of the South Platte River Basin's labor force works than the United States' (and this appears to be generally true of all of the South Platte River Basin subregions) there is also a convergence. In the trade and transportation-communications sectors there is a downward movement on the part of the South Platte River Basin shares as well as an upward movement in U. S. shares. In the private and governmental service sectors it seems to be more a case of the U. S. percentages increasing at a faster rate than the South Platte River Basin percentages.

The divergence between sectors share of employment in the U.S. and the South Platte River Basin has been and remains greatest in the governmental services--education (private educational employment is included with government education employment in this table) and public administration. This divergence remains high in the transportation-communications sectors, but has decreased considerably in the trade sectors while increasing in the private service sectors. Hence in the sense that the South Platte River Basin could once have been described as a trade center for the surrounding area it could now be characterized as a service center.

Table c-1 also indicates that the South Platte River Basin has had lower levels of unemployment over the past twenty years than has the United States generally.

Table c-3 and Figure c-1 compare the growth in employment by industry for the South Platte River Basin, subregions and comparison regions. The greatest percentage growth occurred in the mining sector although the actual numbers involved is not great. Most of the exceptional growth in the Dry Plains counties occurred in the Nebraska counties of Cheyenne and Kimball and was related to petroleum activities. The exceptional rate of growth in the manufacturing and construction sectors in the Dry Plains Subregion are again the influence of the growing city of Cheyenne, Wyoming.

Figure c-2 graphically relates growth of employment in the various industrial sectors in the South Platte River Basin to growth of employment in the United States in the period 1950-60. The 45° line represents an equal rate of growth in the two areas. Any position to the right of this line indicates a faster growth in the South Platte River Basin than in the United States. All industrial sectors plotted have done so except one.

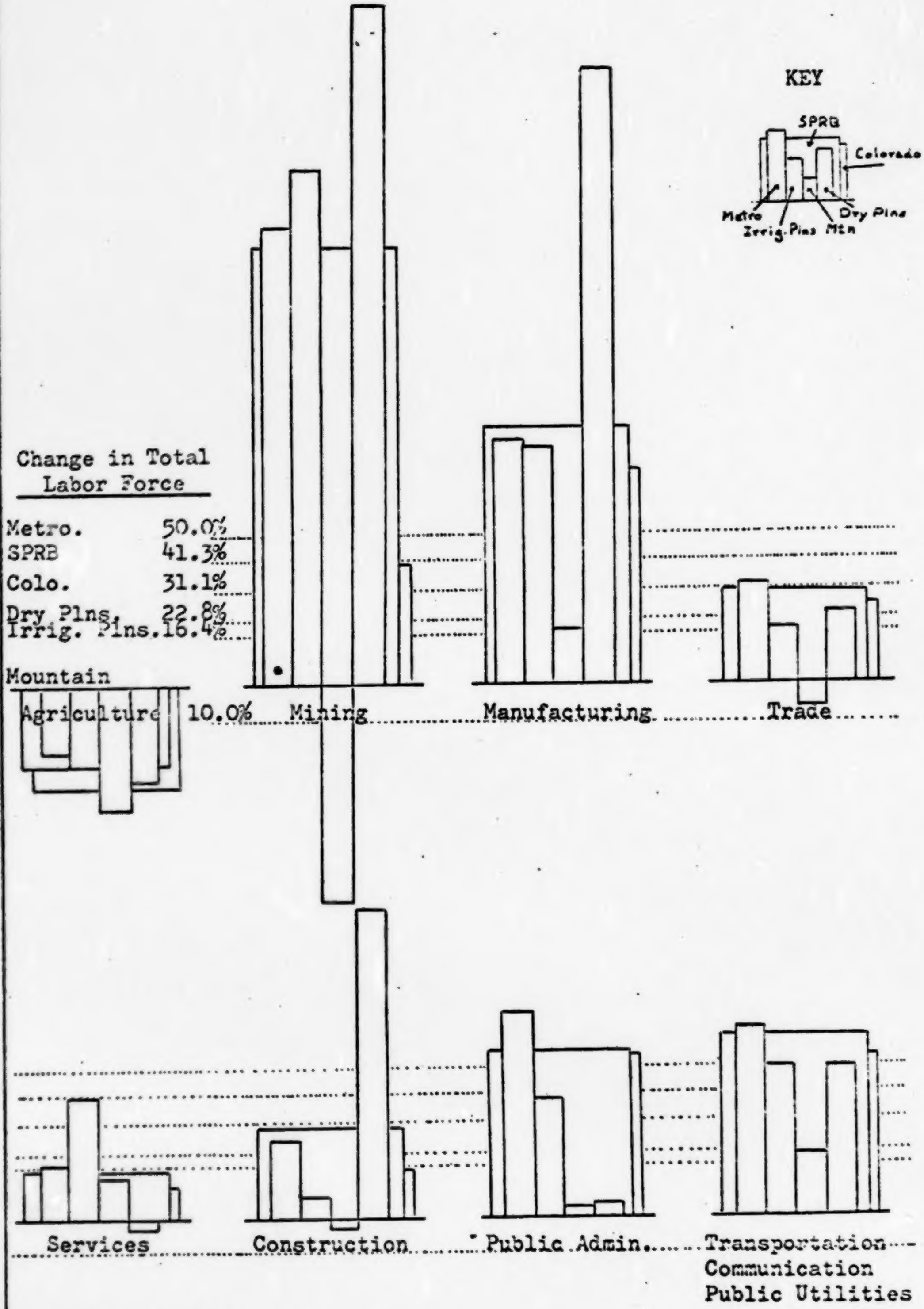
## TABLE c-3

## PERCENT CHANGE IN EMPLOYMENT BY INDUSTRY GROUP FOR THE SOUTH PLATTE RIVER BASIN SUBREGIONS, AND RELATED REGIONS, 1950-1960

| Industry Group | Metro. | Irrig. Plains | Mountain | Dry Plains | SPRB | Colo. | Nebr. | Wyo. | U.S. |
|---|---|---|---|---|---|---|---|---|---|
| Agriculture | -21.3 | -26.6 | -39.8 | -31.6 | -26.7 | -32.9 | -26.6 | -26.5 | -38.2 |
| Mining | 148.0 | 167.8 | -70.0 | 222.5 | 142.2 | 38.9 | 75.3 | 1.4 | -29.8 |
| Construction | 26.2 | 6.1 | -3.1 | 100.3 | 28.7 | 16.0 | -3.4 | 21.5 | 10.3 |
| Manufacturing | 80.5 | 77.8 | 17.4 | 210.7 | 84.4 | 69.6 | 36.7 | 43.2 | 10.2 |
| Transportation | 6.5 | 28.7 | 18.8 | -17.5 | 3.7 | 0.0 | -18.0 | -22.6 | -7.8 |
| Communication | 40.6 | 48.5 | 100.0 | 63.3 | 43.2 | 32.5 | 26.4 | 32.9 | 15.3 |
| Public Utilities | 29.9 | 55.6 | 24.3 | 73.7 | 36.8 | 31.8 | 21.2 | 48.8 | 14.4 |
| Wholesale Trade | 35.8 | 16.4 | 18.2 | 13.3 | 32.5 | 26.4 | -1.4 | 19.5 | 12.6 |
| Retail Trade | 32.6 | 19.6 | 8.2 | 25.3 | 29.8 | 27.5 | 6.9 | 27.4 | 12.1 |
| F.I.R.E.[a] | 77.5 | 79.4 | 85.1 | 85.7 | 78.1 | 74.4 | 27.2 | 56.5 | 40.3 |
| Business & Repair Services | 39.3 | 23.9 | 31.2 | -4.4 | 24.4 | 11.4 | -13.7 | -19.5 | 23.1 |
| Personal Service | 32.5 | 36.7 | 14.1 | 42.5 | 33.7 | 30.0 | 20.3 | 40.8 | 11.3 |
| Entertainment & Recreation | 11.4 | 15.9 | 6.7 | 11.4 | 7.5 | -1.1 | -15.5 | -27.0 | 1.9 |
| Education | 97.0 | 97.0 | 82.2 | 57.6 | 87.8 | 84.8 | 42.1 | 53.9 | 63.2 |
| Other Professional Services | 72.0 | 89.3 | -12.0 | 76.7 | 73.5 | 71.8 | 62.4 | 71.0 | 44.9 |
| Public Administration | 66.1 | 37.5 | 3.6 | 4.0 | 53.6 | 52.4 | 17.5 | 16.5 | 27.3 |
| Industry Not Reported | 279.0 | 84.0 | 40.4 | 59.7 | 222.1 | 198.9 | 16.1 | 53.8 | 209.2 |

[a] Finance, Insurance, Real Estate

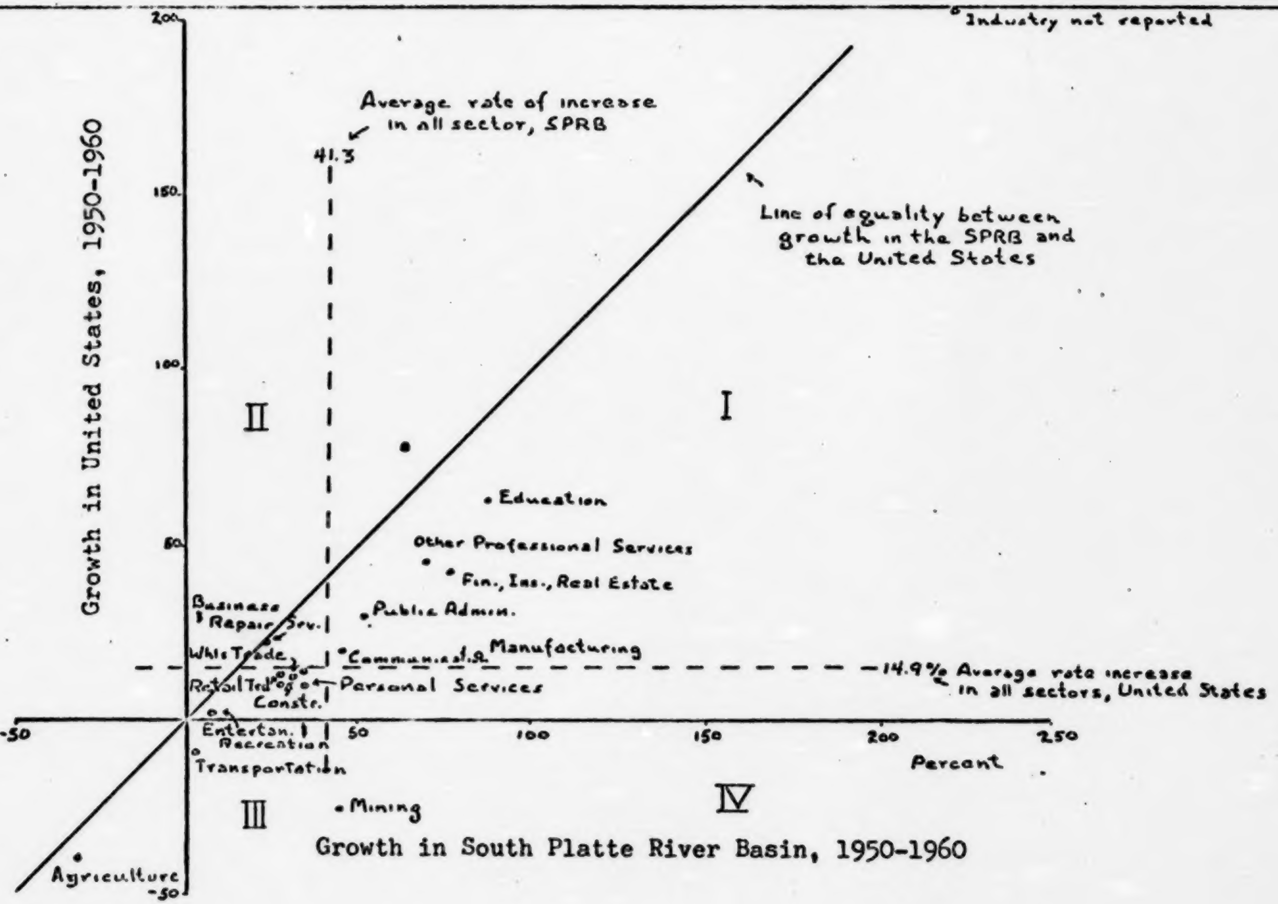
Source: Table c-12, Appendix C



Source: Table c-3 and c-1

Fig. c-1 --Percent Change in Employment by Industry Group for The South Platte River Basin, Subregion, Colorado, 1950-1960

Agriculture falls to the right of the 45° line in the double negative quadrant of the graph signifying that employment in this sector decreased at a slower rate in the South Platte River Basin than in the United States. The vertical dotted line represents the rate of increase in total employment in the South Platte River Basin, the horizontal dotted line the rate of increase in total employment in the United States. Location in the quadrant marked I indicates that sector grew faster than the average rate of increase for either the South Platte River Basin or the United States. Here we find education, public administration, other professional services, manufacturing and communications. In quadrant II are those activities which grew faster than the U. S. average, but slower than the SPRB average. Only business and repair services is in this category. Quadrant III represents a growth rate slower than both the U. S. average and the SPRB average. Wholesale and retail trade, construction, personal services, entertainment and recreation services, public utilities, transportation and agriculture are all found in this quadrant. Quadrant IV in which only mining occurs measures a rate of growth faster than the SPRB average but slower than the U. S. average.

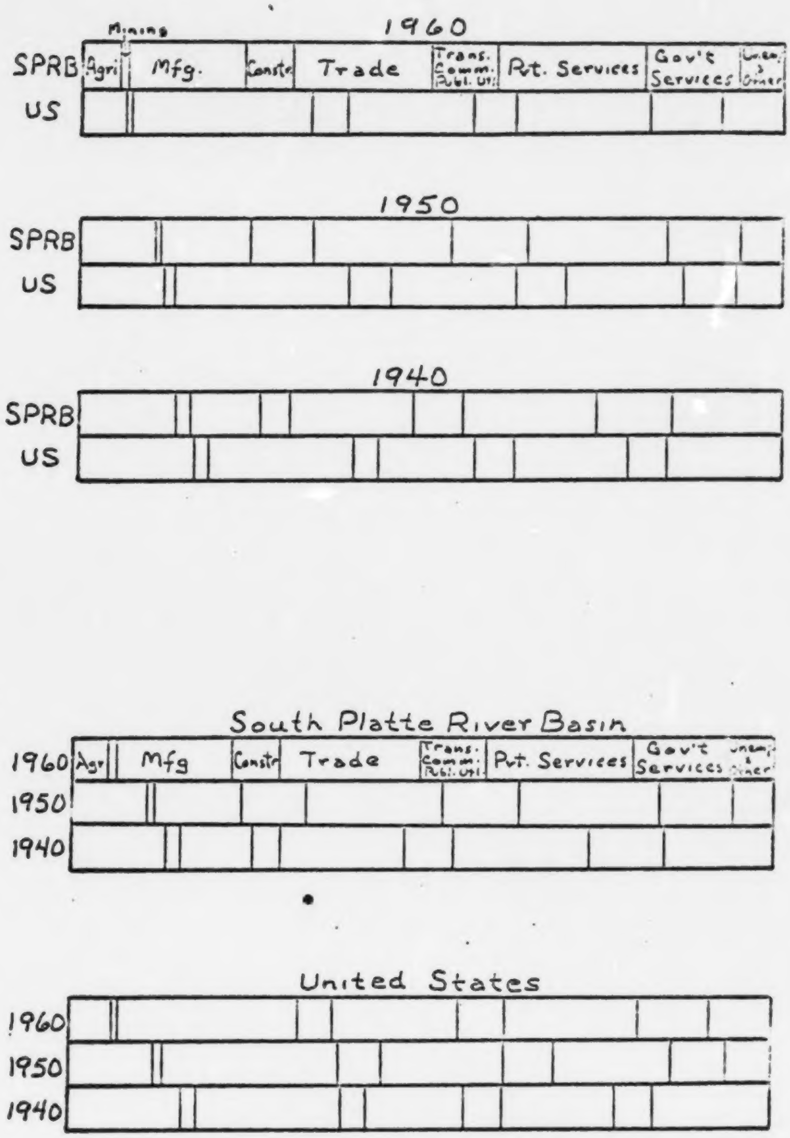


Source: Table c-3

Fig. c-2 --Relative Growth in Employment, South Platte River Basin and The United States, 1950-1960

Figure c-3 contrasts the industrial composition of the South Platte River Basin with the United States and the change over time, 1940-1960, in both regions. It emphasizes the difference in the manufacturing share of employment between the two. Table c-4 and Figure c-4 show the share of the South Platte River Basin employment in each sector accounted for by each subregion. They further point up the predominance of the Metropolitan Subregion in every sector but agriculture and that this overweighing importance is growing in every sector except construction and manufacturing.

Table c-5 ranks the industrial sectors in their order of importance as employers of the labor force in the South Platte River Basin, Subregions and the United States. Manufacturing, which was the number one employer in the United States in all three census years, grew from fourth place to first place in the South Platte River Basin, third to first place in the Metropolitan Subregion, but has climbed no higher than fourth or sixth place in the other three subregions. Agriculture remains third in importance in the United States but is only eighth in importance in the South Platte River Basin. It is fourteenth in the list in the Metropolitan Subregion, but first, second, and third in the Irrigated Plains, Dry Plains, and Mountain Subregions, respectively. Retail trade, construction, professional



Source: Table c-2

Fig. c-3 --Industrial Composition of Employment in The South Platte River Basin and the United States, 1940, 1950, 1960

## TABLE c-4

## SUBREGION SHARE OF SOUTH PLATTE RIVER BASIN EMPLOYMENT BY INDUSTRY GROUP

| | 1960 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Area | Agr. | Mining | Constr. | Mfg. | Transp. | Trade | Pvt. Serv. | Govt. Serv. | Unempl. and Other | Tota Labo Forc |
| Metropolitan | 27.2 | 61.2 | 71.9 | 87.0 | 77.2 | 79.8 | 82.2 | 77.1 | 81.3 | 77. |
| Irrigated Plains | 47.7 | 18.7 | 13.7 | 7.4 | 10.3 | 11.8 | 10.3 | 13.4 | 11.4 | 13. |
| Mountain | 0.8 | 1.4 | 1.1 | 0.2 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0. |
| Dry Plains | 24.3 | 18.6 | 13.2 | 5.5 | 12.0 | 8.0 | 7.1 | 9.0 | 6.9 | 8. |
| SPRB | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100. |
| | 1950 | | | | | | | | | |
| Metropolitan | 25.3 | 59.8 | 73.4 | 88.9 | 76.6 | 78.0 | 80.9 | 72.6 | 74.0 | 73. |
| Irrigated Plains | 47.6 | 16.9 | 16.7 | 7.6 | 8.5 | 12.9 | 11.2 | 14.1 | 16.3 | 15. |
| Mountain | 1.0 | 9.2 | 1.5 | 0.2 | 0.4 | 0.6 | 0.5 | 0.6 | 0.9 | 0. |
| Dry Plains | 26.1 | 14.0 | 8.5 | 3.2 | 14.5 | 8.4 | 7.3 | 12.7 | 8.8 | 10. |
| SPRB | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100. |
| | 1940 | | | | | | | | | |
| Metropolitan | 25.2 | 60.2 | 72.4 | 87.9 | 72.6 | 77.9 | 79.0 | 54.4 | 70.5 | 68. |
| Irrigated Plains | 44.8 | 16.5 | 12.3 | 8.5 | 9.4 | 12.8 | 11.3 | 13.1 | 19.6 | 17. |
| Mountain | 1.4 | 21.9 | 1.6 | 0.4 | 0.6 | 0.8 | 0.7 | 0.7 | 1.6 | 1. |
| Dry Plains | 28.5 | 1.4 | 13.6 | 3.2 | 17.4 | 8.6 | 8.2 | 23.2 | 8.2 | 13. |
| | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100. |

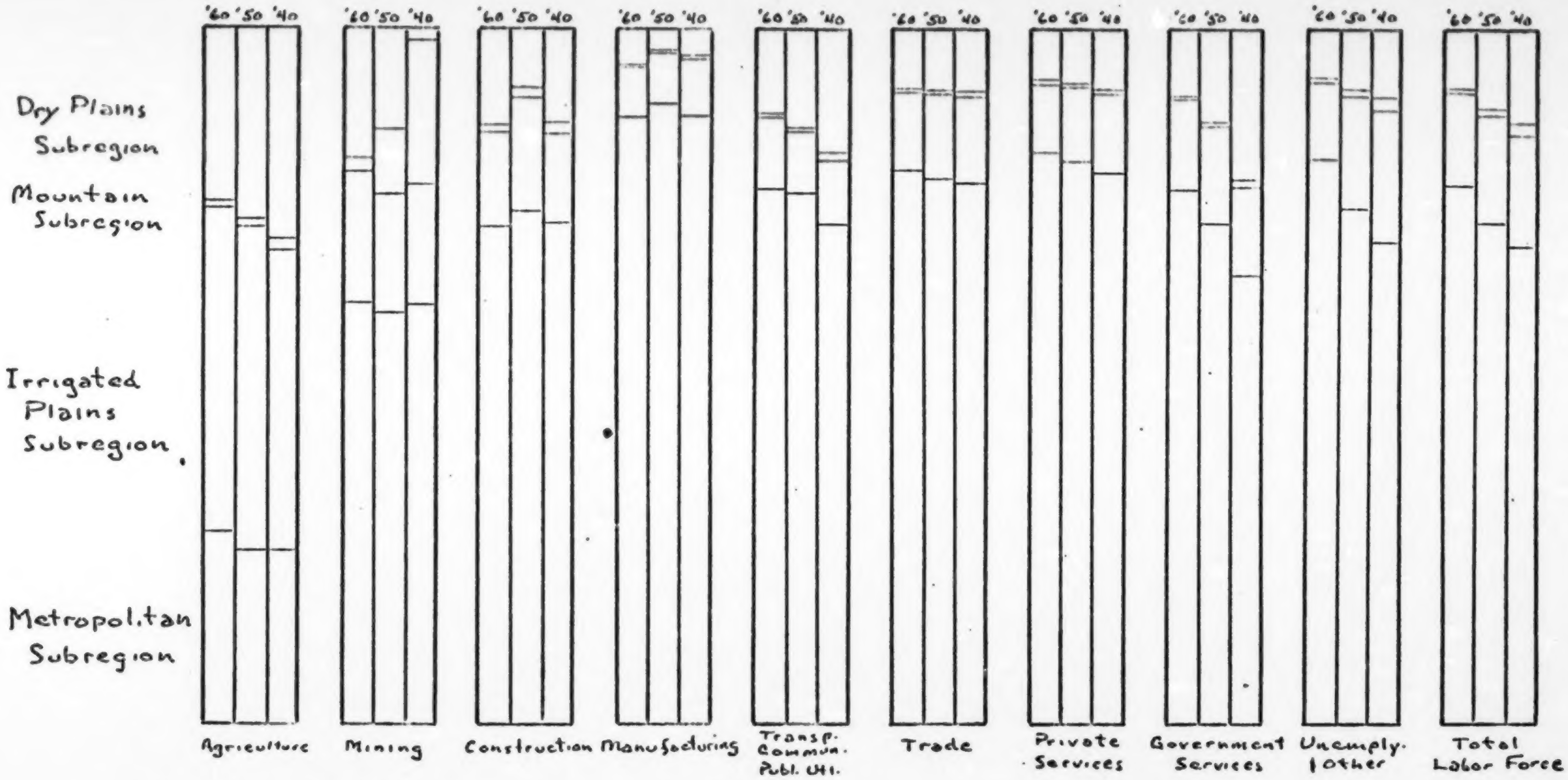
Source: Table c-12

## TABLE c-4

## SUBREGION SHARE OF SOUTH PLATTE RIVER BASIN EMPLOYMENT BY INDUSTRY GROUP

| Area | Agr. | Mining | Constr. | Mfg. | Transp. | Trade | Pvt. Serv. | Govt. Serv. | Unempl. and Other | Total Labor Force |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1960 | | | | | | | | | |
| Metropolitan | 27.2 | 61.2 | 71.9 | 87.0 | 77.2 | 79.8 | 82.2 | 77.1 | 81.3 | 77.5 |
| Irrigated Plains | 47.7 | 18.7 | 13.7 | 7.4 | 10.3 | 11.8 | 10.3 | 13.4 | 11.4 | 13.0 |
| Mountain | 0.8 | 1.4 | 1.1 | 0.2 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0.5 |
| Dry Plains | 24.3 | 18.6 | 13.2 | 5.5 | 12.0 | 8.0 | 7.1 | 9.0 | 6.9 | 8.0 |
| SPRB | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| | 1950 | | | | | | | | | |
| Metropolitan | 25.3 | 59.8 | 73.4 | 88.9 | 76.6 | 78.0 | 80.9 | 72.6 | 74.0 | 73.0 |
| Irrigated Plains | 47.6 | 16.9 | 16.7 | 7.6 | 8.5 | 12.9 | 11.2 | 14.1 | 16.3 | 15.7 |
| Mountain | 1.0 | 9.2 | 1.5 | 0.2 | 0.4 | 0.6 | 0.5 | 0.6 | 0.9 | 0.7 |
| Dry Plains | 26.1 | 14.0 | 8.5 | 3.2 | 14.5 | 8.4 | 7.3 | 12.7 | 8.8 | 10.5 |
| SPRB | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| | 1940 | | | | | | | | | |
| Metropolitan | 25.2 | 60.2 | 72.4 | 87.9 | 72.6 | 77.9 | 79.0 | 54.4 | 70.5 | 68.4 |
| Irrigated Plains | 44.8 | 16.5 | 12.3 | 8.5 | 9.4 | 12.8 | 11.3 | 13.1 | 19.6 | 17.3 |
| Mountain | 1.4 | 21.9 | 1.6 | 0.4 | 0.6 | 0.8 | 0.7 | 0.7 | 1.6 | 1.3 |
| Dry Plains | 28.5 | 1.4 | 13.6 | 3.2 | 17.4 | 8.6 | 8.2 | 23.2 | 8.2 | 13.0 |
| | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: Table c-12



Source: Table c-4

Fig. c-4 --Subregional Share of Total South Platte River Basin Employment, By Industry Group, 1940, 1950, 1960

### TABLE c-5

### RANK ORDER OF IMPORTANCE OF EMPLOYMENT BY INDUSTRY GROUP, IN THE SOUTH PLATTE RIVER BASIN 1940, 1950, 1960

| South Platte River Basin | | | | | | United States | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1960 | | 1950 | | 1940 | | 1960 | | 1950 | | 1940 | |
| Industry & Rank | % of Total Emply. | Rank | % of Total Emply. | Rank | % of Total Emply. | Industry & Rank | % of Total Emply. | Rank | % of Total Emply. | Rank | % of Total Emply. |
| 1. Manufacturing | 16.4 | 2. | 17.0 | 13. | 14.9 | 1. Manufacturing | 25.7 | 1. | 24.7 | 1. | 20.2 |
| 2. Retail Trade | 15.4 | 1. | 12.6 | 2. | 14.4 | 2. Retail Trade | 14.0 | 2. | 14.4 | 3. | 16.2 |
| 3. Professional & Related Serv. | 7.4 | 8. | 10.5 | 8. | 13.2 | 3. Agriculture | 6.3 | 3. | 11.8 | 7. | 14.4 |
| 4. Construction | 7.3 | 4. | 8.0 | 1. | 9.0 | 4. Professional & Related Serv. | 5.8 | 5. | 5.8 | 2. | 11.9 |
| 5. Public Admin. | 6.7 | 9. | 6.9 | 7. | 7.5 | 5. Personal Serv. | 5.6 | 6. | 5.8 | 5. | 7.4 |
| 6. Education | 6.2 | 5. | 6.2 | 5. | 6.7 | 6. Construction | 5.5 | 10. | 4.9 | 10. | 4.1 |
| 7. Personal Services | 5.8 | 7. | 6.1 | 9. | 5.7 | 7. Unemployed | 5.1 | 7. | 4.8 | 6. | 3.9 |
| 8. Agriculture | 5.4 | 3. | 6.0 | 4. | 4.6 | 8. Education | 4.9 | 4. | 4.6 | 4. | 3.4 |
| 9. Transportation | 5.1 | 6. | 4.7 | 3. | 4.2 | 9. Public Admin. | 4.7 | 9. | 4.2 | 8. | 2.9 |
| 10. F.I.R.E. | 5.1 | 11. | 4.5 | 6. | 3.9 | 10. Transportation | 4.0 | 8. | 3.5 | 11. | 2.7 |
| 11. Wholesale Trade | 4.3 | 10. | 4.1 | 10. | 3.4 | 11. F.I.R.E. | 3.9 | 13. | 3.3 | 9. | 2.6 |
| 12. Indus. Not Rept. | 3.4 | 13. | 3.8 | 11. | 3.3 | 12. Indus. Not Rept. | 3.9 | 11. | 3.2 | 13. | 2.2 |
| 13. Unemployed | 3.4 | 14. | 3.1 | 14. | 2.1 | 13. Wholesale Trade | 3.2 | 14. | 2.2 | 17. | 1.7 |
| 14. Bus. & Rep. Serv. | 2.7 | 15. | 1.7 | 17. | 1.7 | 14. Bus. & Rep. Serv. | 2.3 | 17. | 1.5 | 14. | 1.6 |
| 15. Communications | 1.7 | 16. | 1.5 | 12. | 1.4 | 15. Public Utilities | 1.3 | 12. | 1.4 | 12. | 1.3 |
| 16. Public Utilities | 1.5 | 12. | 1.5 | 15. | 1.1 | 16. Communications | 1.2 | 15. | 1.3 | 15. | 1.0 |
| 17. Mining | 1.1 | 18. | 1.1 | 16. | 1.0 | 17. Mining | 0.9 | 16. | 1.1 | 16. | 0.7 |
| 18. Entertainment & Recreation Serv. | 0.9 | 17. | 0.7 | 18. | 1.0 | 18. Entertainment & Recreation Serv. | 0.7 | 18. | 0.8 | 18. | 0.7 |

Source: Table c-2

TABLE c-5 Continued

Metropolitan

| 1960 |  | 1950 |  | 1940 |  |
|---|---|---|---|---|---|
| Industry & Rank | % of Total Emply. | Rank | % of Total Emply. | Rank | % of Total Emply. |
| 1. Manufacturing | 18.5 | 2. | 17.8 | 2. | 16.2 |
| 2. Retail Trade | 15.6 | 1. | 15.3 | 12. | 15.2 |
| 3. Professional & Related Serv. | 8.0 | 5. | 8.0 | 1. | 11.6 |
| 4. Public Admin. | 7.1 | 9. | 7.1 | 6. | 8.6 |
| 5. Construction | 6.7 | 3. | 7.0 | 4. | 6.0 |
| 6. Personal Serv. | 5.8 | 6. | 6.5 | 7. | 5.8 |
| 7. Education | 5.8 | 4. | 6.4 | 3. | 5.8 |
| 8. F.I.R.E. | 5.7 | 10. | 5.2 | 14. | 4.9 |
| 9. Transportation | 5.1 | 8. | 4.8 | 5. | 4.8 |
| 10. Wholesale Trade | 4.8 | 7. | 4.4 | 8. | 4.4 |
| 11. Indus. Not Rept. | 3.8 | 12. | 3.9 | 10. | 3.9 |
| 12. Unemployed | 3.3 | 14. | 3.6 | 7. | 3.0 |
| 13. Bus. & Rep. Serv. | 2.9 | 13. | 3.1 | 13. | 2.3 |
| 14. Agriculture | 1.9 | 15. | 1.9 | 11. | 1.6 |
| 15. Communications | 1.8 | 16. | 1.6 | 17. | 1.5 |
| 16. Public Utilities | 1.4 | 11. | 1.5 | 15. | 1.4 |
| 17. Mining | 0.9 | 18. | 1.2 | 16. | 1.1 |
| 18. Entertainment & Recreation Serv. | 0.9 | 17. | 0.5 | 18. | 0.8 |

Irrigated Plains

| 1960 |  | 1950 |  | 1940 |  |
|---|---|---|---|---|---|
| Industry & Rank | % of Total Emply. | Rank | % of Total Emply. | Rank | % of Total Emply. |
| 1. Agriculture | 20.0 | 1. | 31.7 | 1. | 34.4 |
| 2. Retail Trade | 15.2 | 2. | 14.7 | 9. | 17.4 |
| 3. Education | 9.6 | 5. | 8.4 | 2. | 11.1 |
| 4. Manufacturing | 9.4 | 3. | 6.5 | 6. | 5.3 |
| 5. Construction | 7.7 | 4. | 6.1 | 3. | 5.0 |
| 6. Personal Serv. | 5.8 | 6. | 4.9 | 4. | 4.4 |
| 7. Professional & Related Serv. | 5.5 | 9. | 4.1 | 5. | 3.2 |
| 8. Public Admin. | 3.8 | 7. | 3.4 | 8. | 2.9 |
| 9. Unemployed | 3.8 | 13. | 3.2 | 10. | 2.8 |
| 10. Transportation | 3.4 | 8. | 3.2 | 7. | 2.6 |
| 11. F.I.R.E. | 3.3 | 10. | 3.1 | 12. | 1.9 |
| 12. Wholesale Trade | 2.9 | 12. | 2.9 | 13. | 1.9 |
| 13. Bus. & Rep. Serv. | 2.1 | 11. | 2.1 | 16. | 1.7 |
| 14. Indus. Not Rept. | 2.1 | 15. | 1.4 | 11. | 1.5 |
| 15. Public Utilities | 1.8 | 14. | 1.4 | 14. | 1.0 |
| 16. Mining | 1.6 | 17. | 1.0 | 17. | 0.7 |
| 17. Communications | 1.3 | 18. | 1.0 | 15. | 0.7 |
| 18. Entertainment & Recreation Serv. | 0.6 | 16. | 0.7 | 18. | 0.6 |

Source: Table c-2

TABLE c-5 Continued

Mountain

| 1960 Industry & Rank | 1960 % of Total Emply. | 1950 Rank | 1950 % of Total Emply. | 1940 Rank | 1940 % of Total Emply. |
|---|---|---|---|---|---|
| 1. Retail Trade | 18.6 | 1. | 18.2 | 9. | 28.9 |
| 2. Construction | 17.7 | 2. | 16.4 | 8. | 18.8 |
| 3. Agriculture | 9.7 | 3. | 14.5 | 3. | 14.2 |
| 4. Personal Serv. | 8.9 | 9. | 8.5 | 1. | 9.5 |
| 5. Education | 8.0 | 4. | 7.0 | 2. | 5.5 |
| 6. Manufacturing | 5.6 | 8. | 4.6 | 4. | 4.5 |
| 7. Public Admin. | 5.2 | 7. | 4.5 | 5. | 3.0 |
| 8. Unemployed | 3.8 | 6. | 4.3 | 6. | 2.4 |
| 9. Mining | 3.4 | 10. | 3.4 | 7. | 2.4 |
| 10. Transportation | 3.0 | 5. | 4.0 | 10. | 2.3 |
| 11. Professional & Related Serv. | 2.7 | 12. | 3.2 | 11. | 2.0 |
| 12. Bus. & Rep. Serv. | 2.5 | 11. | 2.8 | 12. | 1.6 |
| 13. Communications | 2.3 | 16. | 2.2 | 16. | 0.9 |
| 14. Public Utilities | 2.3 | 14. | 1.7 | 14. | 0.8 |
| 15. F.I.R.E.[a] | 2.3 | 18. | 1.4 | 15. | 0.8 |
| 16. Indus. Not Rept. | 1.4 | 17. | 1.2 | 17. | 0.6 |
| 17. Entertainment & Recreation Serv. | 1.3 | 15. | 1.1 | 13. | 0.4 |
| 18. Wholesale Trade | 1.2 | 13. | 1.0 | 18. | 0.3 |

Dry Plains

| 1960 Industry & Rank | 1960 % of Total Emply. | 1950 Rank | 1950 % of Total Emply. | 1940 Rank | 1940 % of Total Emply. |
|---|---|---|---|---|---|
| 1. Retail Trade | 15.2 | 2. | 25.9 | 2. | 29.1 |
| 2. Agriculture | 14.4 | 1. | 14.9 | 6. | 15.8 |
| 3. Construction | 10.5 | 5. | 11.7 | 1. | 9.8 |
| 4. Manufacturing | 9.8 | 6. | 9.3 | 11. | 9.7 |
| 5. Transportation | 7.9 | 3. | 6.4 | 5. | 9.4 |
| 6. Public Admin. | 7.9 | 7. | 5.1 | 7. | 5.2 |
| 7. Personal Serv. | 5.9 | 4. | 3.9 | 3. | 4.8 |
| 8. Professional & Related Serv. | 5.0 | 9. | 3.8 | 9. | 2.9 |
| 9. Education | 4.8 | 8. | 3.5 | 8. | 2.8 |
| 10. F.I.R.E. | 3.2 | 14. | 2.8 | 4. | 2.2 |
| 11. Unemployed | 2.9 | 11. | 2.8 | 13. | 1.8 |
| 12. Mining | 2.3 | 13. | 2.3 | 14. | 1.6 |
| 13. Wholesale Trade | 2.2 | 10. | 2.1 | 10. | 1.4 |
| 14. Bus. & Rep. Serv. | 2.2 | 15. | 1.7 | 15. | 0.7 |
| 15. Indus. Not Rept. | 2.1 | 17. | 1.1 | 17. | 0.6 |
| 16. Public Utilities | 1.5 | 16. | 1.1 | 16. | 0.6 |
| 17. Communications | 1.4 | 12. | 0.9 | 18. | 0.5 |
| 18. Entertainment & Recreation | 0.7 | 18. | 0.7 | 12. | 0.1 |

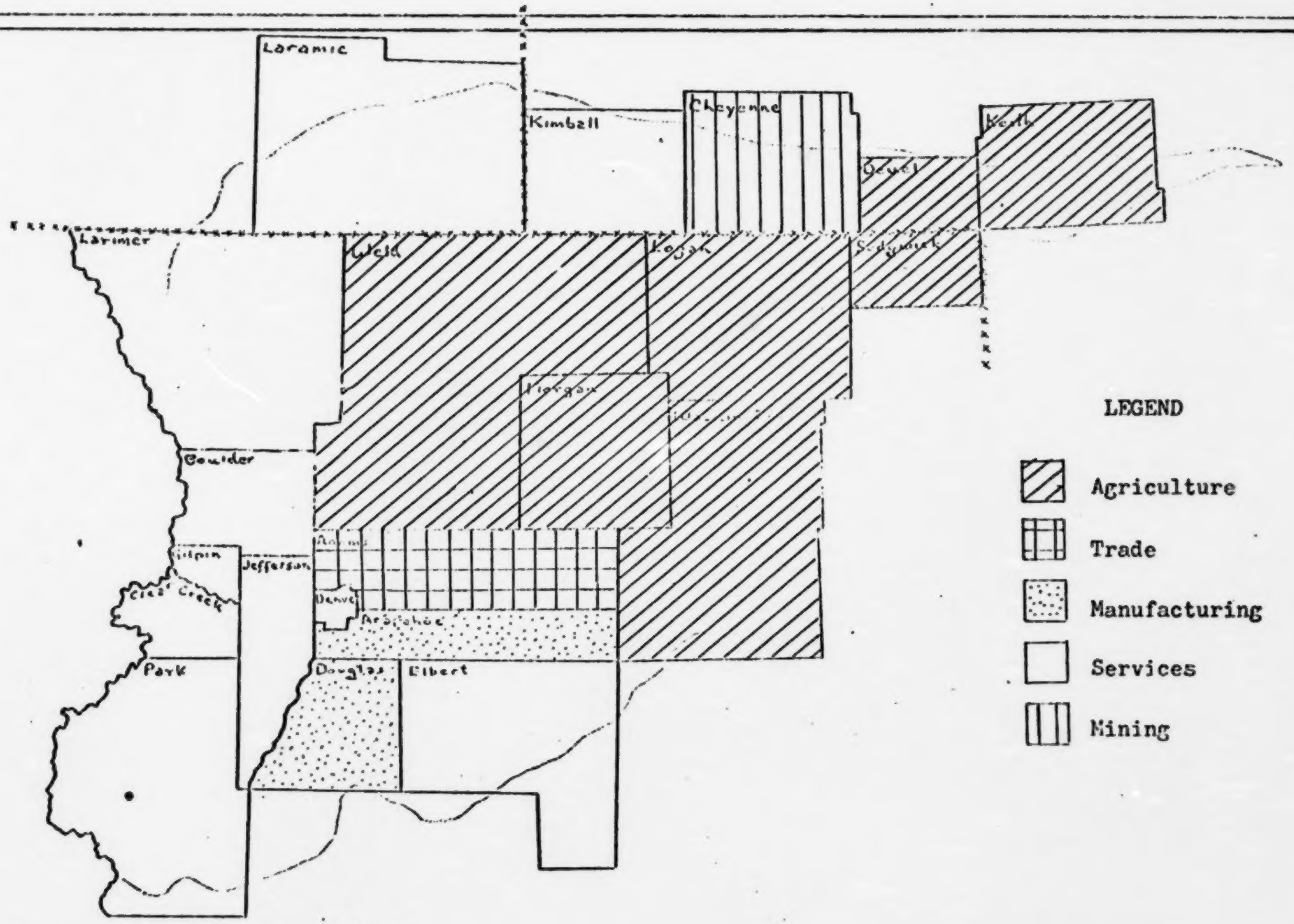
[a] Finance, Insurance, Real Estate

Source: Table c-2

and related services or personal services generally round out the top six employers. However, education ranks third in importance in the Dry Plains Subregion and public administration is fourth in the Metropolitan Subregion. Figure c-5 illustrates the major source of employment by county.

Table c-6 and Figure c-6 break down the workers of the various areas by occupation, contrasting the share of the total labor force in each occupational group in 1950 and 1960. The professional and technical occupational group showed the greatest increase in share of total in the South Platte River Basin as was also true in the United States generally, but not as great an increase as for the United States. The clerical category also increased in share of total. The proportion of workers in the Farmers category decreased very substantially in all areas, somewhat more in the South Platte River Basin than in the United States as a whole. The Managers and Proprietors and the Craftsmen and Operatives groups also decreased proportionately although the Irrigated Plains and Dry Plains ran counter to this trend. The relative importance of sales workers decreased in the South Platte River Basin and all its subregions, but increased in the United States.

Table c-7 and Figure c-7 show the change in numbers of workers in each occupation. The South Platte


Laramie
Kimball
Cheyenne
Keith
Deuel
Sedgwick
Larimer
Weld
Logan
Morgan
Boulder
Adams
Gilpin
Jefferson
Clear Creek
Denver
Arapahoe
Douglas
Elbert
Park
LEGEND
Agriculture
Trade
Manufacturing
Services
Mining

Source: Table c-12 Appendix C

Fig. c-5 --Major Source of Employment in Counties of The South Platte River Basin, 1960

TABLE c-6

OCCUPATION OF LABOR FORCE IN THE SOUTH PLATTE RIVER BASIN, SUBREG
AND RELATED REGIONS, BY PERCENTAGE, 1950-1960

| | 1950 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Area | Professional & Technical | Farmers & Farm Labor | Mgrs. & Proprietors | Clerical | Sales Workers | Craftsmen & Operatives | Other | Employed & Unemployed | Professional & Technical |
| Metropolitan | | | | | | | | | |
| Adams | 6.8 | 19.1 | 7.8 | 9.5 | 5.5 | 30.9 | 16.4 | 3.7 | 10.1 |
| Arapahoe | 9.2 | 6.1 | 9.5 | 12.6 | 7.4 | 35.4 | 16.3 | 3.1 | 17.4 |
| Boulder | 13.6 | 10.2 | 9.3 | 10.3 | 7.7 | 23.8 | 18.4 | 6.2 | 18.7 |
| Denver | 12.8 | .5 | 11.3 | 18.4 | 9.2 | 25.8 | 17.6 | 3.9 | 13.5 |
| Jefferson | 11.6 | 7.2 | 11.0 | 13.0 | 7.7 | 31.6 | 15.1 | 2.5 | 17.0 |
| | 12.2 | 3.2 | 10.8 | 16.5 | 8.7 | 27.2 | 17.3 | 3.9 | 14.5 |
| Irrigated Plains | | | | | | | | | |
| Larimer | 11.9 | 16.9 | 9.7 | 9.0 | 6.7 | 22.3 | 18.5 | 4.6 | 13.3 |
| Logan | 6.9 | 36.8 | 7.5 | 7.3 | 6.9 | 18.3 | 13.3 | 2.6 | 9.9 |
| Morgan | 6.5 | 39.5 | 7.1 | 6.2 | 5.2 | 18.1 | 14.8 | 2.4 | 7.3 |
| Weld | 7.1 | 36.7 | 8.3 | 6.5 | 5.4 | 17.4 | 13.5 | 4.7 | 8.8 |
| | 8.5 | 31.1 | 8.4 | 7.3 | 6.0 | 19.1 | 15.1 | 4.1 | 10.2 |
| Mountain | | | | | | | | | |
| Clear Creek | 9.6 | 2.3 | 14.3 | 6.7 | 5.5 | 33.9 | 23.4 | 4.0 | 11.5 |
| Gilpin | 8.4 | 5.8 | 14.2 | 3.4 | 6.1 | 29.3 | 23.2 | 9.3 | 5.8 |
| Park | 6.0 | 35.2 | 9.7 | 4.3 | 2.9 | 19.3 | 18.9 | 3.4 | 13.3 |
| | 8.2 | 13.5 | 12.8 | 5.5 | 4.7 | 28.5 | 21.9 | 4.5 | 11.4 |
| Dry Plains | | | | | | | | | |
| Douglas | 6.1 | 38.8 | 7.3 | 4.8 | 2.8 | 17.1 | 21.1 | 1.5 | 8.7 |
| Elbert | 4.8 | 64.9 | 4.8 | 3.7 | 2.8 | 9.5 | 8.6 | .4 | 6.3 |
| Sedgwick | 6.3 | 39.9 | 9.7 | 5.2 | 3.7 | 15.8 | 14.1 | 4.9 | 10.1 |
| Washington | 5.9 | 63.6 | 5.9 | 3.8 | 2.7 | 8.6 | 7.9 | 1.3 | 7.1 |
| Cheyenne | 6.5 | 27.5 | 8.6 | 9.0 | 5.6 | 23.2 | 16.8 | 2.4 | 8.5 |
| Deuel | 7.8 | 40.8 | 8.8 | 4.6 | 5.7 | 14.9 | 15.4 | 1.7 | 8.0 |
| Keith | 6.2 | 31.6 | 10.3 | 6.3 | 6.9 | 20.8 | 15.0 | 2.4 | 8.0 |
| Kimball | 5.8 | 43.0 | 8.6 | 5.6 | 5.2 | 14.6 | 13.7 | 3.1 | 6.2 |
| Laramie | 10.2 | 7.1 | 10.9 | 15.1 | 6.6 | 30.0 | 16.4 | 3.3 | 13.5 |
| | 8.0 | 25.5 | 9.4 | 10.2 | 5.6 | 22.9 | 15.2 | 2.8 | 10.9 |
| South Platte River Basin | 11.1 | 10.0 | 10.3 | 14.3 | 7.9 | 25.4 | 16.8 | 3.8 | 13.6 |
| Colorado | 10.0 | 14.0 | 9.9 | 12.2 | 7.2 | 25.2 | 16.8 | 4.2 | 12.7 |
| Nebraska | 7.8 | 28.5 | 8.4 | 10.1 | 6.7 | 20.4 | 15.6 | 2.2 | 9.6 |
| Wyoming | 8.9 | 19.2 | 9.4 | 8.8 | 5.1 | 27.5 | 16.5 | 4.2 | 11.4 |
| United States | 8.3 | 11.3 | 8.4 | 11.6 | 6.6 | 32.0 | 16.6 | 4.7 | 10.6 |

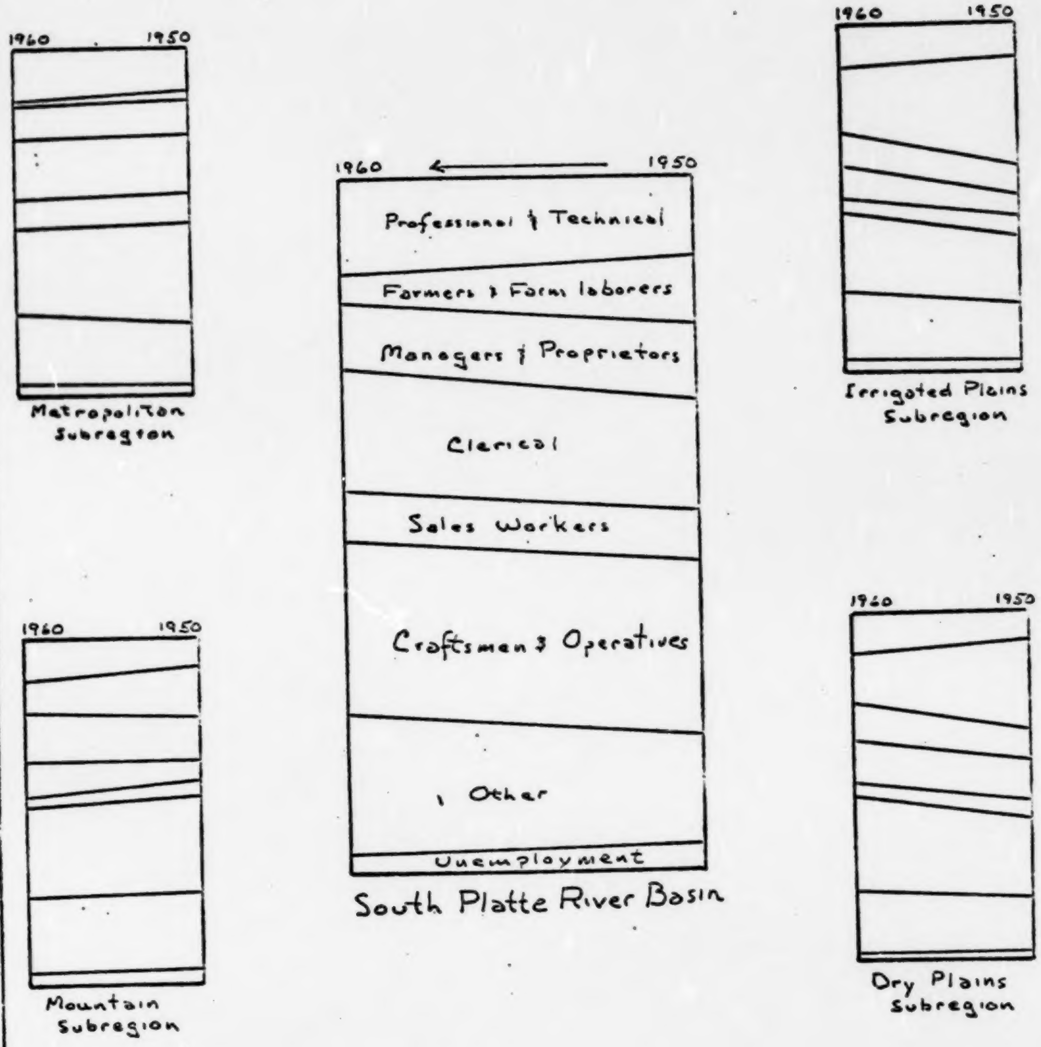
Source: U.S. Bureau of Census, Census of Population, General Social & Economic Characteri
1960 (Table 84), 1950 (Table 43), 1940 (Table 23)

TABLE c-6

ORCE IN THE SOUTH PLATTE RIVER BASIN, SUBREGIONS, COUNTIES,
RELATED REGIONS, BY PERCENTAGE, 1950-1960

| | | | | 1960 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sales Workers | Craftsmen & Operatives | Other | Employed & Unemployed | Professional & Technical | Farmers & Farm Labor | Mgrs. & Proprietors | Clerical | Sales Workers | Craftsmen & Operatives | Other | Employed & Unemployed |
| 5.5 | 30.9 | 16.4 | 3.7 | 10.1 | 3.7 | 8.0 | 16.2 | 7.0 | 33.8 | 17.5 | 3.3 |
| 7.4 | 35.4 | 16.3 | 3.1 | 17.4 | 1.7 | 11.6 | 16.1 | 7.6 | 25.8 | 16.1 | 3.3 |
| 7.7 | 23.8 | 18.4 | 6.2 | 18.7 | 4.6 | 11.0 | 13.5 | 7.3 | 21.4 | 20.1 | 3.0 |
| 9.2 | 25.8 | 17.6 | 3.9 | 13.5 | .4 | 9.3 | 19.5 | 8.1 | 23.2 | 21.9 | 3.5 |
| 7.7 | 31.6 | 15.1 | 2.5 | 17.0 | 1.4 | 13.6 | 17.1 | 8.5 | 25.2 | 14.1 | 2.6 |
| 8.7 | 27.2 | 17.3 | 3.9 | 14.5 | 1.4 | 10.1 | 18.0 | 7.9 | 24.8 | 19.5 | 3.3 |
| 6.7 | 22.3 | 18.5 | 4.6 | 13.3 | 9.4 | 9.8 | 10.7 | 6.1 | 24.7 | 21.4 | 4.3 |
| 6.9 | 18.3 | 13.3 | 2.6 | 9.9 | 21.4 | 10.2 | 9.3 | 5.2 | 23.8 | 17.3 | 2.5 |
| 5.2 | 18.1 | 14.8 | 2.4 | 7.3 | 24.3 | 10.3 | 9.1 | 5.4 | 22.1 | 17.4 | 3.7 |
| 5.4 | 17.4 | 13.5 | 4.7 | 8.8 | 23.4 | 8.4 | 9.9 | 5.6 | 21.9 | 17.8 | 3.7 |
| 6.0 | 19.1 | 15.1 | 4.1 | 10.2 | 18.7 | 9.3 | 10.0 | 5.7 | 23.1 | 18.9 | 3.8 |
| 5.5 | 33.9 | 23.4 | 4.0 | 11.5 | - | 16.6 | 10.5 | 5.4 | 30.4 | 21.1 | 4.3 |
| 6.1 | 29.3 | 23.2 | 9.3 | 5.8 | 4.0 | 16.7 | 16.0 | 5.8 | 20.0 | 28.8 | 2.5 |
| 2.9 | 19.3 | 18.9 | 3.4 | 13.3 | 22.5 | 9.0 | 4.0 | 1.0 | 23.4 | 23.0 | 3.5 |
| 4.7 | 28.5 | 21.9 | 4.5 | 11.4 | 8.4 | 13.9 | 8.9 | 3.9 | 26.6 | 22.7 | 3.8 |
| 2.8 | 17.1 | 21.1 | 1.5 | 8.7 | 15.1 | 9.2 | 8.5 | 4.9 | 33.4 | 18.7 | 1.1 |
| 2.8 | 9.5 | 8.6 | .4 | 6.3 | 46.0 | 6.8 | 7.0 | 1.9 | 18.9 | 11.6 | 1.1 |
| 3.7 | 15.8 | 14.1 | 4.9 | 10.1 | 26.8 | 9.4 | 8.5 | 6.2 | 18.0 | 18.4 | 2.1 |
| 2.7 | 8.6 | 7.9 | 1.3 | 7.1 | 50.8 | 5.9 | 7.2 | 2.2 | 12.9 | 11.5 | 1.9 |
| 5.6 | 23.2 | 16.8 | 2.4 | 8.5 | 17.5 | 10.4 | 11.2 | 5.8 | 25.4 | 17.6 | 3.2 |
| 5.7 | 14.9 | 15.4 | 1.7 | 8.0 | 35.3 | 9.7 | 7.4 | 5.8 | 17.4 | 15.8 | .2 |
| 6.9 | 20.8 | 15.0 | 2.4 | 8.0 | 23.7 | 12.1 | 8.7 | 4.7 | 25.0 | 14.6 | 2.8 |
| 5.2 | 14.6 | 13.7 | 3.1 | 6.2 | 15.8 | 12.5 | 8.0 | 4.3 | 33.1 | 17.1 | 2.6 |
| 6.6 | 30.0 | 16.4 | 3.3 | 13.5 | 3.5 | 10.0 | 16.2 | 5.6 | 28.6 | 18.7 | 3.4 |
| 5.6 | 22.9 | 15.2 | 2.8 | 10.9 | 13.9 | 10.0 | 12.8 | 5.2 | 26.5 | 17.4 | 2.9 |
| 7.9 | 25.4 | 16.8 | 3.8 | 13.6 | 4.8 | 10.0 | 16.4 | 7.4 | 24.8 | 19.3 | 3.3 |
| 7.2 | 25.2 | 16.8 | 4.2 | 12.7 | 6.7 | 9.9 | 14.7 | 7.0 | 24.8 | 19.8 | 3.9 |
| 6.7 | 20.4 | 15.6 | 2.2 | 9.6 | 20.0 | 8.7 | 12.3 | 6.6 | 21.8 | 17.6 | 3.0 |
| 5.1 | 27.5 | 16.5 | 4.2 | 11.4 | 12.1 | 10.1 | 11.2 | 5.3 | 26.0 | 18.4 | 5.1 |
| 6.6 | 32.0 | 16.6 | 4.7 | 10.6 | 5.7 | 7.9 | 13.6 | 6.8 | 30.2 | 19.7 | 5.1 |

ation, General Social & Economic Characteristics,



Source: Table c-6

Fig. c-6 --Occupation of Labor Force in The South Platte River Basin and Subregions, Percentage of Labor Force, 1950 and 1960

River Basin experienced a higher percentage increase (or smaller percentage decrease in the case of Farmers) than the United States in every occupation with the largest increase in Professional and Technical (nearly 75 percent) and Clerical workers.

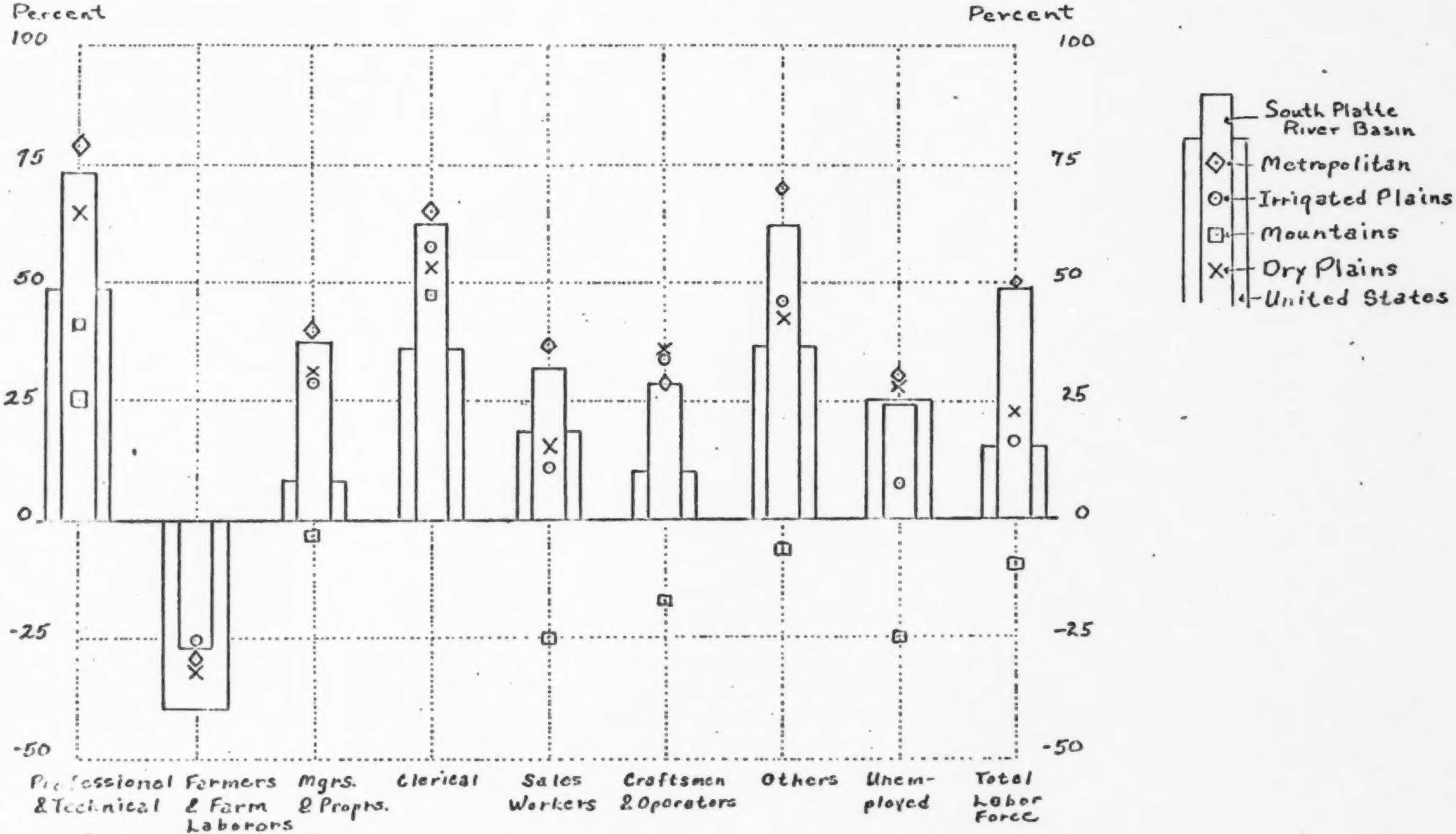
Table c-8 and Figure c-8 look at the labor force in yet a third way, by type of worker. In this categorization, Private Wage and Salary workers predominate in all regions and subregions described. There was a greater increase in the proportion of workers in this category in the South Platte River Basin than in the United States between 1950 and 1960. The greatest proportionate increase was in the Government workers group in both regions with the United States increasing at a faster rate than the South Platte River Basin although the portion of the labor force in government work remains higher in the South Platte River Basin than in the United States generally. The greatest proportionate decrease was in Unpaid family workers with a somewhat greater decrease in the South Platte River Basin than in the United States. Both regions saw a similar proportionate decrease in the Self-employed group. As might be expected, the proportion of the labor force in the Self-employed and Unpaid Family worker groups remains higher in the subregions where agriculture remains more important although even here they constituted

## TABLE c-7

## PERCENTAGE CHANGE IN EMPLOYMENT, BY OCCUPATION, IN THE SOUTH PLATTE RIVER BASIN SUBREGIONS, AND RELATED REGIONS, 1950-1960

| | Professional and Technical | Farmers | Managers and Proprietors | Clerical | Sales | Craftsmen and Operators | Others | Unemployed | Labor Force |
|---|---|---|---|---|---|---|---|---|---|
| Metropolitan | 78.8 | -32.3 | 40.5 | 63.5 | 37.1 | 37.2 | 69.1 | 28.3 | 49.9 |
| Irrigated Plains | 40.8 | -30.0 | 28.6 | 58.8 | 10.8 | 40.8 | 45.0 | 7.0 | 16.5 |
| Mountain | 24.5 | -43.9 | -1.9 | 46.6 | -25.2 | -15.8 | -6.6 | -25.2 | -9.9 |
| Dry Plains | 66.5 | -33.1 | 30.3 | 54.1 | 14.5 | 42.0 | 41.0 | 28.1 | 22.9 |
| South Platte River Basin | 73.0 | -31.5 | 37.6 | 62.4 | 32.0 | 37.6 | 62.3 | 24.2 | 41.4 |
| Colorado | 65.8 | -37.1 | 31.0 | 59.0 | 27.8 | 29.2 | 53.8 | 24.0 | 31.2 |
| Nebraska | 27.6 | -27.4 | 8.1 | 26.9 | 1.9 | 11.1 | 16.8 | 43.2 | 3.7 |
| Wyoming | 45.2 | -28.7 | 11.7 | 43.5 | 17.6 | 6.8 | 26.4 | 34.9 | 13.0 |
| United States | 47.3 | -41.1 | 7.8 | 35.0 | 18.1 | 9.1 | 36.6 | 23.7 | 15.4 |

Source: Same as Table c-6



Source: Table c-7

Fig. c-7 --Percentage Change in Employment by Occupation, in The South Platte River Basin Subregions, Colorado, United States, 1950-1960

## TABLE c-8

## EMPLOYMENT BY CLASS OF WORKER FOR THE SOUTH PLATTE RIVER BASIN, SUBREGIONS, COUNTIES, AND RELATED REGIONS, BY PERCENTAGES, 1950, 1960

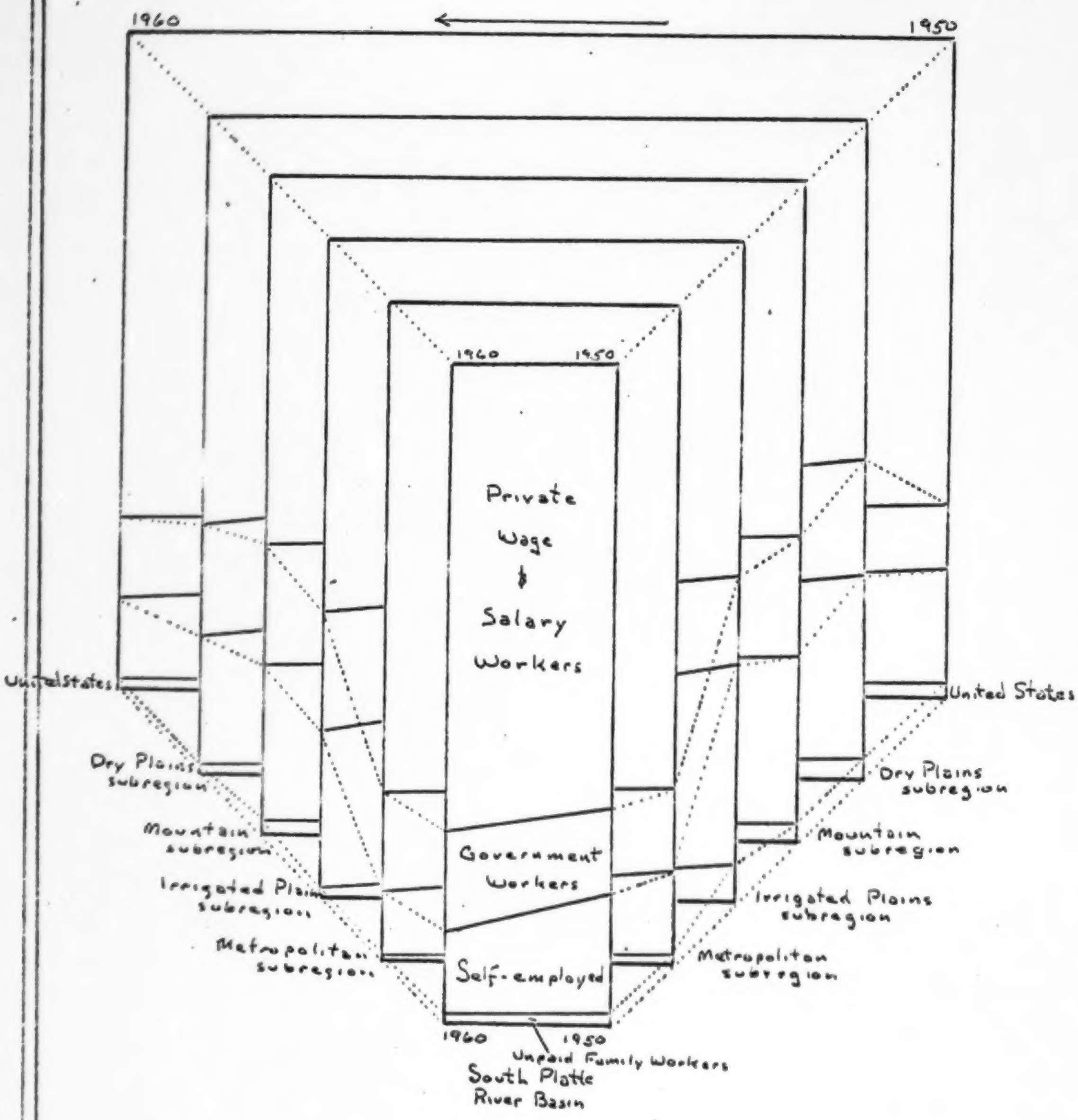
| Area | 1960 | | | |
|---|---|---|---|---|
| | Private Wage & Salary | Government | Self-Employed | Unpaid Family |
| Metropolitan | | | | |
| Adams | 77.7 | 13.1 | 8.7 | .4 |
| Arapahoe | 77.3 | 12.5 | 9.6 | .5 |
| Boulder | 62.5 | 22.8 | 13.6 | .7 |
| Denver | 76.1 | 14.4 | 8.8 | .5 |
| Jefferson | 72.0 | 16.0 | 11.3 | .5 |
| | 74.8 | 14.9 | 9.6 | .5 |
| Irrigated Plains | | | | |
| Larimer | 58.8 | 21.8 | 18.1 | 1.2 |
| Logan | 59.2 | 13.2 | 25.8 | 1.6 |
| Morgan | 55.6 | 12.6 | 30.0 | 1.6 |
| Weld | 58.7 | 15.8 | 23.7 | 1.6 |
| | 58.4 | 17.0 | 22.9 | 1.5 |
| Mountain | | | | |
| Clear Creek | 58.9 | 17.1 | 21.6 | 2.2 |
| Gilpin | 55.0 | 28.0 | 16.8 | - |
| Park | 52.2 | 15.3 | 30.6 | 1.7 |
| | 56.0 | 17.9 | 24.2 | 1.7 |
| Dry Plains | | | | |
| Douglas | 65.7 | 13.6 | 19.8 | .6 |
| Elbert | 32.2 | 14.2 | 53.2 | .2 |
| Sedgwick | 51.7 | 12.6 | 34.5 | 1.0 |
| Washington | 33.6 | 15.0 | 45.3 | 5.8 |
| Cheyenne | 53.7 | 21.7 | 24.0 | .5 |
| Deuel | 48.2 | 12.6 | 38.8 | .3 |
| Keith | 59.6 | 8.3 | 31.7 | .3 |
| Kimball | 65.2 | 9.6 | 24.4 | .6 |
| Laramie | 72.7 | 17.9 | 8.8 | .4 |
| | 63.5 | 16.3 | 19.3 | .8 |
| South Platte River Basin | 71.6 | 15.3 | 12.3 | .6 |
| Colorado | 68.9 | 16.0 | 14.1 | .8 |
| Nebraska | 60.5 | 12.1 | 25.0 | 2.2 |
| Wyoming | 65.2 | 15.9 | 17.6 | 1.1 |
| United States | 74.5 | 12.1 | 12.2 | 1.0 |

Source: U. S. Bureau of Census, *Census of Population, General, Social, and Economic Characteristics*, 1960 (Table 84), 1950 (Table 43), 1940 (Table 23).

TABLE c-8--Continued

| Area | 1950 | | | |
|---|---|---|---|---|
| | Private Wage & Salary | Government | Self-Employed | Unpaid Family |
| Metropolitan | | | | |
| Adams | 64.0 | 11.3 | 20.9 | 3.6 |
| Arapahoe | 73.9 | 11.8 | 13.3 | .8 |
| Boulder | 56.9 | 19.3 | 20.8 | 2.9 |
| Denver | 76.5 | 12.5 | 10.6 | .1 |
| Jefferson | 68.4 | 13.5 | 16.4 | 1.4 |
| | 73.6 | 13.0 | 12.6 | .7 |
| Irrigated Plains | | | | |
| Larimer | 52.6 | 19.3 | 24.8 | 3.1 |
| Logan | 49.0 | 8.3 | 33.6 | 8.9 |
| Morgan | 51.1 | 9.0 | 33.1 | 6.7 |
| Weld | 51.7 | 10.9 | 32.5 | 4.7 |
| | 51.5 | 12.8 | 30.4 | 5.0 |
| Mountain | | | | |
| Clear Creek | 54.6 | 19.3 | 24.4 | 1.6 |
| Gilpin | 48.3 | 21.1 | 28.8 | 1.6 |
| Park | 54.3 | 12.1 | 29.8 | 3.7 |
| | 53.6 | 17.2 | 26.7 | 2.3 |
| Dry Plains | | | | |
| Douglas | 45.5 | 11.5 | 39.7 | 3.1 |
| Elbert | 22.9 | 10.0 | 56.6 | 10.3 |
| Sedgwick | 45.9 | 10.1 | 37.7 | 6.1 |
| Washington | 27.5 | 10.5 | 52.8 | 8.9 |
| Cheyenne | 40.9 | 22.6 | 31.9 | 4.5 |
| Deuel | 40.4 | 9.2 | 47.2 | 2.9 |
| Keith | 50.6 | 8.1 | 37.2 | 3.9 |
| Kimball | 43.4 | 8.9 | 43.1 | 4.4 |
| Laramie | 65.4 | 20.7 | 13.3 | .5 |
| | 51.6 | 16.6 | 28.4 | 3.2 |
| South Platte River Basin | 67.7 | 13.4 | 17.2 | 1.6 |
| Colorado | 64.7 | 12.7 | 20.1 | 2.3 |
| Nebraska | 54.4 | 9.8 | 31.0 | 4.7 |
| Wyoming | 61.9 | 13.6 | 21.9 | 2.4 |
| United States | 71.1 | 9.7 | 17.0 | 1.9 |

Source: U. S. Bureau of Census, *Census of Population, General, Social, and Economic Characteristics*, 1960 (Table 84), 1950 (Table 43), 1940 (Table 23).



Source: Table c-8

Fig. c-8 --Employment by Class of Worker, for The South Platte River Basin, Subregions and United States, by Percentages, 1950, 1960 a smaller share of the totals in 1960 than in 1950. Figure c-8 contrasts the relative importance of the four classes of workers in each of the regions and subregion in 1950 along the right diagonal plane, for 1960 along the left diagonal plane and between 1950 and 1960 within each region across the face of each plane.

Finally in Table c-9 and Figure c-9 a measure of the quality of the labor force is made by relating the number of years of schooling completed by the population over 25 years of age. The level of education in the South Platte River Basin is significantly higher than in the United States as a whole. The proportion of college trained people in the South Platte River Basin is fifty percent greater than in the United States although the increase in proportion between 1950 and 1960 is slightly higher for the United States which means the gap is being narrowed somewhat. All the subregions of the South Platte River Basin are well above the United States in proportion of college trained population. The proportion of the population over 25 years old with a high school education is very similar in the South Platte River Basin and the United States. The proportion having no more than an elementary education is much higher in the United States than the South Platte River Basin.

## TABLE c-9

## YEARS OF SCHOOL COMPLETED BY PERCENTAGE OF TOTAL PERSONS 25 YEARS OF AGE OR OLDER IN THE SOUTH PLATTE RIVER BASIN, SUBREGIONS, COUNTIES, AND RELATED REGIONS, 1950, 1960

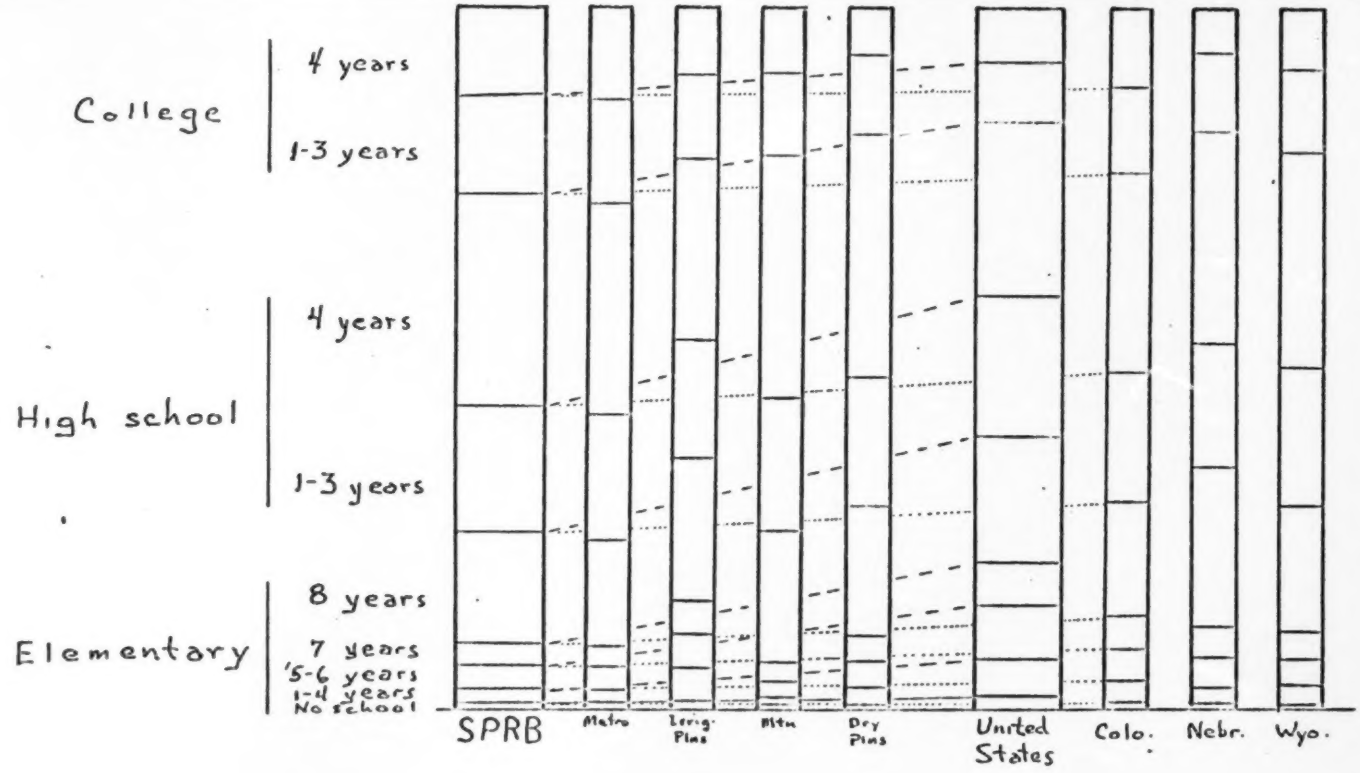
| | 1960 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Elementary School | | | | | High School | | College | |
| | 0 | 1-4 | 5-6 | 7 | 8 | 1-3 | 4 | 1-3 | 4-More |
| Metropolitan | | | | | | | | | |
| Adams | .4 | 1.9 | 3.1 | 3.3 | 15.0 | 21.2 | 36.0 | 11.7 | 7.5 |
| Arapahoe | 1.2 | 1.4 | 2.5 | 2.5 | 12.1 | 16.5 | 34.0 | 15.4 | 15.3 |
| Boulder | .6 | 2.2 | 3.3 | 2.4 | 14.0 | 14.0 | 26.4 | 17.0 | 20.1 |
| Denver | 1.2 | 3.1 | 4.5 | 4.5 | 15.7 | 18.0 | 27.7 | 13.6 | 12.2 |
| Jefferson | .6 | 1.1 | 1.7 | 2.1 | 12.1 | 16.4 | 35.4 | 15.7 | 15.0 |
| | .8 | 2.4 | 3.6 | 3.5 | 14.6 | 17.7 | 30.2 | 14.1 | 13.0 |
| Irrigated Plains | | | | | | | | | |
| Larimer | .8 | 3.4 | 4.4 | 4.0 | 18.3 | 16.4 | 26.2 | 13.8 | 13.0 |
| Logan | .7 | 3.3 | 5.1 | 3.9 | 22.2 | 16.1 | 31.6 | 10.1 | 7.0 |
| Morgan | 1.5 | 4.6 | 5.0 | 5.7 | 23.0 | 18.0 | 27.1 | 9.0 | 6.1 |
| Weld | 1.9 | 5.8 | 6.1 | 5.4 | 20.8 | 16.6 | 24.8 | 10.0 | 8.5 |
| | 1.4 | 4.5 | 5.3 | 4.8 | 20.4 | 16.6 | 26.4 | 11.1 | 9.5 |
| Mountain | | | | | | | | | |
| Clear Creek | .3 | 1.2 | 2.3 | 3.4 | 18.2 | 17.5 | 35.3 | 11.5 | 10.3 |
| Gilpin | - | 1.5 | .9 | 6.2 | 11.6 | 16.8 | 38.6 | 15.1 | 9.3 |
| Park | - | 1.8 | 2.2 | 1.8 | 22.0 | 20.9 | 33.5 | 9.8 | 8.0 |
| | .2 | 1.4 | 2.0 | 3.2 | 18.6 | 18.5 | 35.2 | 11.5 | 9.4 |
| Dry Plains | | | | | | | | | |
| Douglas | .4 | 2.6 | 4.8 | 3.0 | 21.4 | 17.5 | 34.5 | 8.9 | 6.9 |
| Elbert | .8 | 3.6 | 6.1 | 5.7 | 28.2 | 16.4 | 28.0 | 6.7 | 4.4 |
| Sedgwick | 2.6 | 5.8 | 4.7 | 6.1 | 20.3 | 14.4 | 28.0 | 12.8 | 5.2 |
| Washington | .4 | 2.2 | 4.7 | 4.2 | 35.0 | 16.1 | 26.3 | 6.9 | 4.3 |
| Cheyenne | .5 | 2.7 | 3.3 | 4.0 | 21.6 | 15.0 | 33.9 | 11.9 | 5.8 |
| Deuel | .7 | 3.1 | 3.8 | 4.4 | 24.7 | 13.0 | 32.2 | 11.9 | 6.3 |
| Keith | .7 | 2.0 | 2.8 | 2.8 | 25.4 | 15.8 | 31.1 | 14.6 | 6.8 |
| Kimball | .1 | 1.0 | 3.7 | 3.9 | 17.8 | 19.0 | 37.9 | 9.7 | 6.6 |
| Laramie | .4 | 2.5 | 3.6 | 3.3 | 14.0 | 18.8 | 35.7 | 12.8 | 8.9 |
| | .5 | 2.6 | 3.8 | 3.6 | 16.5 | 17.6 | 34.0 | 11.8 | 7.5 |
| South Platte River Basin | .9 | 2.7 | 3.9 | 3.6 | 15.8 | 17.6 | 30.1 | 13.5 | 12.0 |
| Colorado | 1.2 | 3.5 | 4.5 | 4.2 | 16.8 | 17.9 | 28.9 | 12.4 | 10.7 |
| Nebraska | .8 | 2.9 | 4.1 | 4.4 | 23.1 | 17.0 | 30.3 | 10.6 | 6.8 |
| Wyoming | .8 | 2.9 | 3.9 | 4.1 | 17.3 | 19.1 | 31.1 | 12.3 | 8.7 |
| United States | 2.3 | 6.1 | 7.5 | 6.4 | 17.5 | 19.2 | 24.6 | 8.8 | 7.7 |

Source: U.S. Bureau of Census, Census of Population, General Social and Economic Characteristics, 1960 (Table 83), 1950 (Table 42)

TABLE [illegible]-9 Continued

| | 1950 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Elementary School | | | | | High School | | College | |
| | 0 | 1-4 | 5-6 | 7 | 8 | 1-3 | 4 | 1-3 | 4-More |
| Metropolitan | | | | | | | | | |
| Adams | 1.1 | 5.3 | 5.8 | 5.0 | 23.1 | 17.3 | 24.0 | 10.4 | 5.8 |
| Arapahoe | .5 | 2.9 | 4.1 | 4.2 | 20.2 | 19.6 | 27.5 | 11.3 | 7.8 |
| Boulder | .8 | 4.3 | 4.7 | 4.4 | 19.4 | 14.7 | 20.5 | 15.0 | 14.4 |
| Denver | 1.1 | 3.9 | 4.8 | 3.5 | 17.2 | 15.4 | 26.8 | 12.7 | 10.9 |
| Jefferson | .9 | 3.0 | 3.6 | 3.4 | 19.1 | 17.1 | 28.5 | 12.9 | 9.3 |
| | 1.0 | 3.8 | 4.7 | 3.7 | 18.1 | 16.0 | 26.4 | 12.7 | 10.5 |
| Irrigated Plains | | | | | | | | | |
| Larimer | 1.0 | 4.2 | 5.4 | 4.6 | 22.3 | 15.1 | 20.7 | 14.5 | 10.2 |
| Logan | 1.5 | 5.9 | 7.2 | 7.7 | 24.0 | 14.0 | 24.3 | 7.3 | 6.4 |
| Morgan | 1.9 | 6.8 | 7.9 | 6.4 | 25.4 | 15.4 | 20.2 | 8.0 | 5.6 |
| Weld | 2.5 | 7.3 | 7.1 | 6.0 | 23.3 | 15.2 | 19.2 | 9.5 | 7.0 |
| | 1.8 | 6.1 | 6.7 | 5.8 | 23.3 | 15.0 | 20.4 | 10.6 | 7.6 |
| Mountain | | | | | | | | | |
| Clear Creek | .8 | 3.6 | 3.4 | 6.0 | 21.7 | 17.2 | 26.4 | 12.3 | 7.3 |
| Gilpin | .9 | 4.7 | 5.7 | 2.8 | 33.0 | 17.9 | 17.0 | 9.4 | 5.7 |
| Park | .8 | 3.0 | 4.3 | 5.1 | 24.8 | 18.4 | 24.4 | 9.4 | 8.1 |
| | .8 | 3.6 | 4.0 | 5.2 | 24.3 | 17.7 | 24.3 | 10.9 | 7.3 |
| Dry Plains | | | | | | | | | |
| Douglas | 1.0 | 2.7 | 5.7 | 4.7 | 25.7 | 22.0 | 24.5 | 6.7 | 5.2 |
| Elbert | .6 | 5.6 | 5.6 | 7.1 | 31.4 | 16.7 | 19.8 | 6.9 | 3.8 |
| Sedgwick | .7 | 8.2 | 5.6 | 7.8 | 23.9 | 15.6 | 23.7 | 9.0 | 4.5 |
| Washington | .8 | 4.4 | 5.6 | 6.1 | 38.2 | 13.6 | 21.4 | 6.1 | 3.2 |
| Cheyenne | 1.0 | 3.8 | 4.2 | 5.8 | 24.7 | 17.2 | 27.6 | 9.9 | 4.2 |
| Deuel | 1.2 | 4.2 | 4.4 | 5.4 | 24.9 | 17.5 | 27.4 | 9.8 | 4.4 |
| Keith | 1.6 | 2.8 | 5.1 | 6.4 | 28.3 | 16.5 | 24.2 | 9.4 | 3.4 |
| Kimball | .2 | 2.6 | 4.0 | 4.6 | 28.3 | 17.8 | 22.7 | 11.9 | 5.3 |
| Laramie | .8 | 3.1 | 4.4 | 3.9 | 18.2 | 18.2 | 29.1 | 12.2 | 8.1 |
| | .9 | 3.7 | 4.7 | 5.0 | 23.4 | 17.5 | 26.6 | 10.5 | 6.0 |
| South Platte River Basin | 1.1 | 4.2 | 5.0 | 4.2 | 19.5 | 16.0 | 26.4 | 12.1 | 9.6 |
| Colorado | 1.6 | 5.4 | 6.0 | 5.0 | 20.4 | 16.2 | 23.7 | 10.7 | 8.1 |
| Nebraska | .8 | 4.1 | 5.6 | 5.0 | 27.5 | 15.8 | 24.7 | 8.6 | 5.1 |
| Wyoming | 1.2 | 4.5 | 5.4 | 4.9 | 20.5 | 17.7 | 25.0 | 11.0 | 7.1 |
| United States | 2.5 | 8.3 | 9.1 | 6.8 | 20.2 | 17.0 | 20.2 | 7.2 | 6.0 |

Source: U.S. Bureau of Census, Census of Population, General Social and Economic Characteristics, 1960 (Table 83), 1950 (Table 42)



Source: Table c-9

Fig. c-9 --Years of School Completed By Percentage of Total Persons 25 Years of Age or Older in The South Platte River Basin, Subregions, Counties and Related Regions, 1960

A similar, and perhaps analytically, a more orderly method of delineating the differences in rates of growth among regions is one currently being developed by the Office of Business Economics.[3] Using the rate of growth in employment (or income if desired) in the United States as a reference standard, the growth in the region is related to three factors.

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[3] The Regional Economic Studies section of the Office of Business Economics, Department of Commerce, is making a study of the components of employment change in each of 32 industries in each of the 3100 counties of the United States, which will be a useful new tool for the regional analyst. Two volumes have already been published. These are: Growth Patterns in Employment by County, 1940-50 and 1950-60, Volume 1, New England, Volume 2, Mideast. Six additional volumes will be released as they are completed. Development of this methodology by OBE is detailed in:

Lowell D. Ashby, "Growth Patterns in Employment by County 1940-50 and 1950-60," Survey of Current Business, (February, 1966), p. 9-13.

__________, "The Geographical Redistribution of Employment: An Examination of the Elements of Change," Survey of Current Business, October, 1964, p. 13-20.

Robert E. Graham, Jr., "Factors Underlying Changes in the Geographic Distribution of Income," Survey of Current Business, April 1964, p. 15-32.

A similar use of this shift technique was made by Perloff, et al, in Regions Resources and Economic Growth (Baltimore: Johns Hopkins Press, 1960), The proportionality shift and differential shift described in Perloff, p. 70-74, and used throughout the study correspond very closely to the industry mix and regional share of the method refined by OBE, and used here.

The technical antecedents of the method can be seen in:

Edgar S. Dunn, "A Statistical and Analytical Technique for Regional Analysis," Papers and Proceedings. Regional Science Association, Vol. 6, 1960, p. 97-112.

Victor R. Fuchs, Changes in the Location of Manufacturing in the U. S. since 1929, (New Haven, Yale University, 1962), also articles in Papers and Proceedings. Regional Science Association, Vol. 8 and Journal of Regional Science, Vol. 1 (Spring, 1959).

Wilbur Zelinski, "A Method for Measuring Change in the Distribution of Manufacturig Activity: The U.S., 1939-47," Economic Geography, Vol. 34, April 1958, p.95-126.

Daniel Creamer, "Shifts of Manufacturing Industries," Chap. 4, of Industrial Location and National Resources, December 1942, (Washington, D.C.: GPO, 1943).

(1) First as an overall measure of performance is the amount of growth that would have taken place in a given industry in the region in the time period under consideration if it had grown at the rate that all industries in the nation grew during that period. This is the column headed National Growth in Table c-10. Using the manufacturing industry for the 1940-50 period as an example, the 1940 employment in this industry is multiplied by the 1940-50 rate of growth for all industries in the United States.

| 1940 emply. in mfg. in SPRB | | Rate of Chg. all industries in U.S. 1940-50 | |
|---|---|---|---|
| 24,493 | x | 25.247 | = 6,184 |

This is a measure of the region's participation in the overall national growth of which it is a part. A regional total figure in this column that is higher than the actual change in employment in the region would indicate a slow growth region or industry.

(2) The Industry Mix Column is a measure of the growth in the region resulting from the particular types of industries which predominate in that region. An area which has more of the rapid growth industries will

prosper accordingly. This component measures the amount of growth in the region that can be ascribed to the difference in the rate of growth of the particular industry (nationally) and the overall rate of growth in the nation.

| 1940 emply. in mfg. in SPRB | | Rate of Chg. in mfg. in U. S. 1940-50 | | Rate of Chg. All industries in U. S. | |
|---|---|---|---|---|---|
| 24,493 | x | (37.632 | - | 25.247) | = 3,033 |

(3) The third element of change set forth is whether a particular industry grew at a faster or slower rate in the region than it did in the United States as a whole.

| 1940 emply. in mfg. in SPRB | | Rate of Chg. in mfg. emply. in SPRB 1940-50 | | Rate of Chg. in mfg. emply. in U. S., 1940-50 | |
|---|---|---|---|---|---|
| 24,493 | x | (71.898 | - | 37.632) | = 8,393 |

This is perhaps the most important of the three components of change. The regional share component could well be called the competitive effect since it indicates that the region has some competitive advantage (or disadvantage) that is increasing (or decreasing) its share of employment in a particular industry at a greater rate than in that industry in the nation as a whole. It might also be said to be the basic element in change since it is through changes in regional share of given industries that the industry mix of a region is developed. Although this analysis will point out the existence, and perhaps the magnitude, of a competitive advantage, it does not attempt to explain the causes of this competitive difference.[4]

The sum of these three components of employment change must equal the actual total change that took place. The sum of the industrial mix and regional share components is the net relative change or the deviation of the region from the overall national change which is the comparison standard. A positive figure indicates that the region has improved its position relative to the United States. A negative figure reflects a worsened position, showing that the region has a smaller share of national employment at the end of the study period than at the beginning. The size of the figure indicates the magnitude of the change in position.

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[4] This is perhaps a good place to point out that a limitation of this as of all such ratios or coefficients is that they are essentially mechanical devices by which facts can be processed to show certain statistical tendencies. It does not identify cause and effect relationships. For this reason, one should perhaps not insist too strongly on calling the regional share component the competitive advantage of the region.

Table c-10 sets forth the components of employment change in the South Platte River Basin. The total of the net relative change column for 1940-50 indicates that the South Platte River Basin improved its position vis-a-vis the rest of the United States quite considerably during this period. Table c-11 gives a comparison with the entire Rocky Mountain Region and other regions of the United States. The amount of improvement was even greater during the 1950-60 period, more than double. Table c-10 further shows that the industrial mix and regional share components tend to pull in opposite directions as Table c-11 indicates in the case in most regions. This contrary pull was nearly so evident in the 1940-50 decade as in the 1950-60 period. The South Platte River Basin does not seem to possess a growth advantage in the nature of its industrial composition, except possibly in the service industries in 1950-60. However, the growth advantage of a favorable industry mix is declining throughout the nation as the continuing migration from agriculture and other resource based industries results in an increasing similarity of industrial structures everywhere.

Competitive advantages (regional share) in agriculture in the South Platte River Basin have somewhat ameliorated the effect of this generally declining industry on employment. A favorable competitive effect has enhanced employment growth in the South Platte River

TABLE c-10

EMPLOYMENT AND COMPONENTS OF EMPLOYMENT CHANGE IN T
SOUTH PLATTE RIVER BASIN, 1940-1950 AND 1950-1960

| Industry Sector | Employment | | | 1940-1950 | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Changes Related To | | | Total Change | Net Relative Change |
| | 1940 | 1950 | 1960 | National Growth | Industrial Mix | Regional Share | | |
| Agri., Forestry and Fishing | 35,578 | 34,942 | 25,646 | 8,982.38 | -15,323.80 | 5,715.72 | -626 | -9,608.08 |
| Mining | 4,772 | 2,219 | 5.376 | 1,204.79 | -1,141.89 | -2,615.91 | -2,553 | -3,757.80 |
| Construction | 12,318 | 26,632 | 34,292 | 3,109.93 | 4,976.35 | 6,227.61 | 14,314 | 11,203.96 |
| Manufacturing | 24,493 | 42,103 | 77,644 | 6,183.75 | 3,033.46 | 8,392.77 | 17,610 | 11,426.23 |
| Durable | 9,793 | 14,429 | 39,340 | 2,472.44 | 2,490.95 | -327.48 | 4,636 | 2,163.47 |
| Non-durable | 14,700 | 27,674 | 38,304 | 3,711.31 | 28.67 | 9,233.95 | 12,974 | 9,262.62 |
| Trans., Comm., and Pub. Util. | 21,382 | 33,739 | 38,847 | 5,398.31 | 3,489.97 | 3,468.59 | 12,357 | 6,958.56 |
| Transportation | 15,485 | 23,165 | 24,025 | 3,909.50 | 1,456.36 | 2,314.08 | 7,680 | 3,770.44 |
| Communications | 3,151 | 5,537 | 7,930 | 795.53 | 1,729.36 | 138.93 | 2,386 | 1,590.43 |
| Public Util. | 2,746 | 5,037 | 6,892 | 693.28 | 446.44 | 1,151.26 | 2,291 | 1,597.70 |
| Trade | 47,521 | 71,880 | 93,739 | 11,997.63 | 7,076.35 | 5,284.81 | 24,359 | 12,361.16 |
| Wholesale | 8,847 | 15,179 | 20,119 | 2,233.60 | 3,361.42 | 736.96 | 6,332 | 4,098.38 |
| Retail | 38,674 | 56,701 | 73,620 | 9,764.02 | 4,050.33 | 4,212.37 | 18,027 | 8,262.70 |
| F.I.R.E. | 9,349 | 13,545 | 24,135 | 2,360.34 | 460.34 | 1,375.24 | 4,196 | 1,835.58 |
| Services | 50,179 | 70,262 | 108,501 | 12,668.69 | 1,484.80 | 5,929.15 | 20,083 | 7,413.95 |
| Bus. & Repair | 5,846 | 10,365 | 12,903 | 1,475.94 | 1,332.54 | 1,710.48 | 4,519 | 3,043.02 |
| Personal | 20,337 | 20,420 | 27,317 | 5,134.48 | -7,420.97 | 2,369.46 | 83 | -5,051.51 |
| Entert. & Recr. | 2,093 | 3,749 | 4,032 | 528.42 | -16.93 | 1,144.49 | 1,656 | 1,127.56 |
| Education | 9,856 | 15,611 | 29,326 | 2,488.34 | 736.83 | 2,529.74 | 5,755 | 3,266.57 |
| Medical & Other Professional | 12,047 | 20,117 | 34,923 | 3,041.51 | 3,057.89 | 1,970.53 | 3,070 | 5,028.42 |
| Public Admin. | 18,091 | 20,663 | 31,747 | 4,567.43 | 9,482.94 | -11,478.38 | 2,572 | -1,995.44 |
| Indus. Not Rept. | 3,827 | 4,978 | 16,037 | 966.20 | -369.27 | 554.03 | 1,151 | 184.76 |
| Total | 227,510 | 320,973 | 455,974 | 57,439.45 | 13,169.25 | 22,854.20 | 93,463 | 36,022.88 |

Source: Table c-12, Appendix C

TABLE c-10

EMPLOYMENT AND COMPONENTS OF EMPLOYMENT CHANGE IN THE SOUTH PLATTE RIVER BASIN, 1940-1950 AND 1950-1960

| 1940-1950 | | | | | 1950-1960 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Changes Related To | | | Total Change | Net Relative Change | Changes Related To | | | Total Change | Net Relative Change |
| ional owth | Industrial Mix | Regional Share | | | National Growth | Industrial Mix | Regional Share | | |
| 982.38 | -15,323.80 | 5,715.72 | -626 | -9,608.08 | 5,080.62 | -18,416.91 | 4,029.97 | -9,306 | -14,386.94 |
| 204.79 | -1,141.89 | -2,615.91 | -2,553 | -3,757.80 | 322.55 | -982.71 | 3,817.14 | 3,157 | 2,834.43 |
| 109.93 | 4,976.35 | 6,227.61 | 14,314 | 11,203.96 | 3,871.23 | -1,114.55 | 4,903.22 | 7,660 | 3,788.67 |
| 183.75 | 3,033.46 | 8,392.77 | 17,610 | 11,426.23 | 6,120.09 | 1,986.42 | 27,434.31 | 35,541 | 29,420.73 |
| 472.44 | 2,490.95 | -327.48 | 4,636 | 2,163.47 | 2,097.40 | 1,738.55 | 21,075.00 | 24,911 | 22,813.55 |
| 711.31 | 28.67 | 9,233.95 | 12,974 | 9,262.62 | 4,022.69 | -730.32 | 7,337.48 | 10,630 | 6,607.16 |
| 398.31 | 3,489.97 | 3,468.59 | 12,357 | 6,958.56 | 4,904.30 | -4,841.55 | 5,044.99 | 5,108 | 203.44 |
| 909.50 | 1,456.36 | 2,314.08 | 7,680 | 3,770.44 | 3,367.26 | -5,046.03 | 2,538.65 | 860 | -2,507.38 |
| 795.53 | 1,729.36 | 138.93 | 2,386 | 1,590.43 | 804.86 | 45.51 | 1,542.61 | 2,393 | 1,588.12 |
| 693.28 | 446.44 | 1,151.26 | 2,291 | 1,597.70 | 732.18 | -5.99 | 1,128.79 | 1,855 | 1,122.80 |
| 997.63 | 7,076.35 | 5,284.81 | 24,359 | 12,361.16 | 10,448.48 | -1,656.12 | 13,066.35 | 21,859 | 11,410.23 |
| 233.60 | 3,361.42 | 736.96 | 6,332 | 4,098.38 | 2,206.42 | -291.29 | 3,024.72 | 4,940 | 2,733.43 |
| 764.02 | 4,050.33 | 4,212.37 | 18,027 | 8,262.70 | 8,242.06 | -1,356.85 | 10,033.24 | 16,919 | 8,676.39 |
| 360.34 | 460.34 | 1,375.24 | 4,196 | 1,835.58 | 1,968.90 | 3,499.62 | 5,121.36 | 10,590 | 8,620.98 |
| 668.69 | 1,484.80 | 5,929.15 | 20,083 | 7,413.95 | 10,213.26 | 12,463.07 | 15,562.33 | 38,239 | 28,025.40 |
| 475.94 | 1,332.54 | 1,710.48 | 4,519 | 3,043.02 | 1,506.66 | 895.43 | 135.88 | 2,538 | 1,031.31 |
| 134.48 | -7,420.97 | 2,369.46 | 83 | -5,051.51 | 2,968.25 | -649.36 | 4,577.96 | 6,897 | 3,928.60 |
| 528.42 | -16.93 | 1,144.49 | 1,656 | 1,127.56 | 544.95 | -473.20 | 211.22 | 283 | -261.98 |
| ,488.34 | 736.83 | 2,529.74 | 5,755 | 3,266.57 | 2,269.21 | 7,607.55 | 3,838.12 | 13,715 | 11,445.67 |
| ,041.51 | 3,057.89 | 1,970.53 | 3,070 | 5,028.42 | 2,924.21 | 6,125.42 | 5,756.28 | 14,806 | 11,881.70 |
| ,567.43 | 9,482.94 | -11,478.38 | 2,572 | -1,995.44 | 3,003.57 | 2,653.54 | 5,426.72 | 11,084 | 8,080.26 |
| 966.20 | -369.27 | 554.03 | 1,151 | 184.76 | 723.60 | -261.79 | 10,597.17 | 11,059 | 10,335.38 |
| ,439.45 | 13,169.25 | 22,854.20 | 93,463 | 36,022.88 | 46,656.04 | -6,670.98 | 95,003.56 | 134,991 | 88,352.58 |

TABLE c-11

EMPLOYMENT AND COMPONENTS OF EMPLOYMENT CHANGE
IN MAJOR U.S. REGIONS, 1940-50 AND 1950-60
(THOUSANDS OF EMPLOYEES)

| | Employment | | | 1940-1950 | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Changes Related To | | | | |
| | 1940 | 1950 | 1960 | National Growth | Industrial Mix | Regional Share | Total Change | Net Relative [illegible] |
| United States | 45,375.8 | 57,474.9 | 66,372.6 | 12,099.1 | 0.0 | 0.0 | 12,099.1 | 0.0 |
| New England | 3,060.1 | 3,661.2 | 4,137.9 | 816.0 | 225.2 | -440.1 | 601.0 | -214.9 |
| Mideast | 10,876.2 | 13,363.2 | 14,892.1 | 2,900.0 | 821.6 | -1,234.6 | 2,487.0 | -413.0 |
| Great Lakes | 9,256.8 | 11,931.3 | 13,403.4 | 2,468.3 | 507.1 | -300.8 | 2,674.5 | 206.3 |
| Plains | 4,513.5 | 5,378.9 | 5,683.3 | 1,203.5 | -316.6 | -21.5 | 865.4 | -338.1 |
| Southeast | 9,878.3 | 11,913.4 | 13,414.1 | 2,634.0 | -1,299.7 | 700.8 | 2,035.1 | -598.9 |
| Southwest | 3,087.5 | 4,091.5 | 5,055.6 | 823.3 | -220.7 | 401.4 | 1,003.9 | 180.7 |
| Rocky Mountain | 929.4 | 1,264.1 | 1,558.3 | 247.8 | -33.1 | 120.0 | 334.7 | 86.9 |
| Far West | 3,773.9 | 5,871.3 | 8,227.9 | 1,006.3 | 316.2 | 774.9 | 2,097.4 | 1,091.1 |

Source: Survey of Current Business, Vol. 46. No. 2, (February 1966) p. 10

TABLE c-11 Continued

| | 1950-1960 | | | | |
|---|---|---|---|---|---|
| | Changes Related To | | | Total Change | Net Relative Change |
| | National Growth | Industrial Mix | Regional Share | | |
| United States | 8,897.7 | 0.0 | 0.0 | 8,897.7 | 0.0 |
| New England | 566.8 | 198.2 | -288.2 | 476.8 | -90.0 |
| Mideast | 2,068.8 | 758.4 | -1,298.3 | 1,528.9 | -539.9 |
| Great Lakes | 1,847.1 | 277.1 | -652.1 | 1,472.1 | -375.0 |
| Plains | 832.7 | -320.9 | -207.4 | 304.4 | -528.3 |
| Southeast | 1,844.3 | -1,062.4 | 718.8 | 1,500.7 | -343.6 |
| Southwest | 633.4 | -100.8 | 431.5 | 964.1 | 330.7 |
| Rocky Mountain | 195.7 | -64.6 | 163.1 | 294.2 | 98.5 |
| Far West | 908.9 | 315.0 | 1,132.6 | 2,356.6 | 1,447.6 |

Source: Survey of Current Business, Vol. 46. No. 2, (February 1966) p. 10

Basin in nearly every industry except mining and public administration in 1940-50. In 1950-60 the competitive share component of employment growth exceeded the share derived from national growth in all but four industries (agriculture, transportation, business and repair services, entertainment and recreation services) and exceeded the increase in employment derived from the industrial mix in all but three industries (business and repair services, education, medical and other professional services). The increase in employment resulting from the competitive effect is most striking in durable manufacturing where the increase in employment in the region in this component of change is ten times greater than the national growth effect and twenty times greater than the industry mix effect. In addition, this is in direct contrast to the situation during the 1940-50 period when the South Platte River Basin showed a competitive disadvantage in durable goods manufacture. This is no doubt due to several factors. First are the permissive factors which include the rise in importance of research oriented industries producing small, valuable goods which can locate just about any place (where people prefer to live for example); and secondly improvements in transportation which have somewhat lessened the disadvantages of poor market access. In addition, general prosperity and high incomes emboldens people to move to areas where they think living conditions are better. These permissive factors have permitted the positive resources of the region, its climate, space and topography to become competitive advantages.

One example of this change in the character of industries is the Federal defense procurement switch from heavy military goods such as tanks, other heavy vehicles and weapons and ammunition to missiles and associated electronic goods, which amounted to only 12 percent of military hard goods contracts in 1953, but 50 percent of military hard goods contracts in 1961. Associated with this is the changed geographical distribution of military prime contracts awards. In 1951-53, only 0.4 percent of such contracts were awarded to industries in the Rocky Mountain Region. In 1961, this had increased to 4.3 percent. Colorado's share of such contracts was 0.2 percent in 1951-53 and 2.1 percent in 1961.[2]

The Office of Business Economics has further developed a graphic presentation of this component analysis similar to the relative change graph of Figure c-2, which quite simply portrays a region's growth position. Such a picturization of the growth position of the SPRB and its employment sectors is seen in Figures c-10 and c-11 and compared with the position of the major regions of the United States in Figures c-12 and c-13.

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[2] Robert E. Graham, Jr., "Factors Underlying Changes in the Geographic Distribution of Income," Survey of Current Business (April, 1964), p. 23.

This is a rectangular coordinate graph in which the amount of employment resulting from the regional share is measured on the horizontal axis and the employment resulting from the industry mix effect is measured on the vertical axis. Since national employment change is the standard of reference, the national growth effect is zero and is the index point, labeled I on the graph. Any point to the right of I (the vertical axis) is a positive change in regional share, to the left, a negative change in regional share. Any point above this position (the horizontal axis) represents a positive change due to industry mix, any point below is negative change. The dashed, 45 degree lines are lines of equality at any point along which the employment change in the regional share and the industry mix components are of equal magnitude. In the upper right quadrant the change in both regional share and industry mix are positive; in the lower left quadrant both are negative; in the upper left quadrant the industry mix component is positive, the regional share is negative; in the lower right quadrant the change in the regional share is a positive one while the industry mix change is negative.

Since at any point along the DIH line the change resulting from the industry mix effect exactly offsets that resulting from the regional share, this line represents a zero net relative change in employment. Any point above and to the right of this line represents a net relative increase in employment, the exact magnitude of which can be measured by a horizontal or vertical line from that point to the DIH line. Likewise, any point below and to the left of this line represents a negative net relative change (a loss in employment).

The eight sections (octants) of the graph that are delineated by the vertical, horizontal and diagonal lines are numbered for easy reference, and represent in descending order less favorable growth positions. Octants 1 and 2 are strong gaining or growth positions since both the industry mix and the regional share effect are positive (with regional share effect stronger in octant 1 and industry mix effect stronger in octant 2). Octants 3 and 4 are moderate gaining positions with a negative change in one component (industry mix in octant 3 and regional share in octant 4) and a positive change in the other, but in both cases the positive change is the stronger. Octants 5 and 6 are moderate losing (declining) positions because while they both indicate a positive change in one component the negative change component is the stronger. Octants 7 and 8 are big loss positions with negative changes in both components.

A look at figure c-10 shows the SPRB located in Octant 1 (in 1940-50), a strong growth position with growth due to regional share dominant. The distance from I to the point of the arrow measures the actual change in employment in the 1940-50 period. All but three of the ten industry sectors plotted are in strong gaining octants. Public Administration and agriculture are in moderate losing octants. Only mining is in a strong loss octant. A comparison with the major regions of the United States in Figure c-12 indicates that only the Far West Region fared as well. The Rocky Mountain Region was in a weaker growth position than the SPRB. Since all components must add to the total, a more detailed industry breakdown would not affect the position within this diagram.

In 1950-60 the picture changed somewhat. The SPRB as a region slipped from octant 1 where both components of change were positive to octant 3 where the industry mix component is negative, though not strongly. This is a weaker growth position than in 1940-50. Nevertheless, all but one industrial sector experienced a net relative gain. Public Administration and mining both moved into gaining positions in 1950-60. Agriculture is in a slightly poorer position, than it was in 1940-50 although still showing a net relative gain in regional share. Trade and construction both fell out of the double gaining octant. However, in 1950-60 there was no big loss sectors, all but agriculture gaining more in regional share than they lost in industry mix, which adds up to the big gain in employment for the SPRB as seen in the abnormally long SPRB vector in Figure c-11. Although no longer in the same most favorable growth category as the Far West Region, the SPRB in 1950-60 remained in a stronger position than the Southwest Region, which had moved ahead of the Rocky Mountain Region. All other regions in the United States showed relative net losses, with the Great Lakes Region dropping into a lower octant. Only New England improved its position, and that only marginally.